COMPETING VALUES AND MEDIATING EFFECTS OF KNOWLEDGE CHAIN ON ORGANISATIONAL PERFORMANCE: A STUDY OF SERVICE FIRMS IN IRAN

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ABSTRACT

This thesis aims at examining the impact of competing values on management activities, organizational activities, and organizational performance using the knowledge chain model. Using a random sample set of 302 Iranian service sector firms and a knowledge chain framework, which was adapted and expanded based on structural equation modelling, this thesis examined seven hypotheses on the influence of competing values, and management and organizational activities on organizational performance, including the mediating effects of management activities and organizational activities, on organizational performance. Iran was chosen because of a lack of such research on the developing countries, but especially on countries engulfed by political instability and economic uncertainty.

The results produced important analytical conclusions. Firstly, the results show that, adhocracy value enjoyed a direct impact on management activities. Secondly, the results support a significant relationship between competing values and organisational activities of the knowledge chain. Thirdly, despite the presence of a significant relationship between adhocracy and hierarchy values, and organisational performance, a similar relationship did not exist between clan and market values, and organisational performance. Nevertheless, the results show a strong influence of competing values on organisational performance. These results are consistent with past findings.

Although the results confirm a significant relationship between management activities and organisational performance, it was not enough to support the effect of organisational activities on organisational performance. Also the contradictory findings on the relationship between adhocracy and knowledge management suggests that it depends on the organisation.

Overall, the results show that the knowledge chain model is an influential factor on organisational performance. In addition, the results also show that management

activities have a mediating effect on the relationship between competing values and organisational performance, and the mediating effect of knowledge chain model on the relationship between competing values and organisational performance. In addition, the results show that management activities have a positive impact on the relationship between organizational activities and organizational performance, and on the relationship between organisational activity and knowledge chain model suggesting that organizational performance can be improved by strengthening management activities. Finally, the results also showed the positive effect of the knowledge chain model on the relationship between competing values and organisational performance.

ABSTRAK

Thesis ini telah meninjau dampak nilai persaingan keatas kegiatan pengurusan, kegiatan organisasi, dan prestasi organisasi berlandaskan model rantaian pengetahuan. Dengan mengunakan sampel data daripada 302 firma perkhidmatan Iran dan kerangka rantaian pengetahun, yang diubahsuai dan dipanjangkan berasaskan permodelan persamaan struktur, tesis ini mendekati lapan hipotesis terhadap pengaruh nilai persaingan, dan kegiatan pengurusan dan organisasi ke atas prestasi organisasi, termasuk pengaruh pencelahan kegiatan pengurusan dan kegiatan organisasi ke atas prestasi organisasi. Iran dipilih disebabkan kekurangan penyelidikan yang membabitkan negara membangun, dan negara yang mengalami suasana politik dan ekonomi yang tidak stabil.

Dapatan kajian menghasilkan kesimpulan yang penting. Pertamanya, dapatan menunujukan bahawa nilai adokrasi mempunyai pengaruh langsung keatas kegiatan pengurusan. Keduanya, hubungan antara nilai persaingan dan kegiatan organisasi rantaian pengetahuan signifikan. Ketiganya, meskipun wujudnya hubungan signifikan antara adockasi dan nilai hiraki, dan prestasi organisasi, hubungan yang sama wujud antara klan dan nilai pasaran, dan prestasi organisasi. Bagaimanapun, dapatan menunjukan pengaruh kuat nilai persaingan keatas prestasi organisasi. Dapatan ini menyokong penemuan lepas.

Biarpun dapatan mengesahkan hubungan antara kegiatan pengurusan dan prestasi organisasi, ianya tidak cukup untuk mendokong pengaurh kegiatan organisasi keatas prestasi organisasi. Tambahan pula, penemuan bercangah terhadap hubungan antara adokrasi and pengurusan pengetahuan memperlihatkan ianya bergantung pada organisasi.

Pada keseluruhannya, dapatan menunjukan bahawa model rantaian pengetahuan merupakan faktor berpengaruh keatas prestasi organisasi. Tambahan pula, dapatan juga

menunjukan bahawa kegiatan pengurusan mempunyai kesan pencelahan keatas hubungan antara nilai persaingan dan prestasi organisasi, dan kesan pencelahan model rantaian pengetahuan keatas hubungan antara nilai persaingan dan prestasi organisasi. Di samping itu, dapatan menunjukan bahawa kegiatan pengurusan menpengaruhi secara positif hubungan antara keiatan organisasi dan prestasi organisasi, dan hubungan antara kegiatan organisasi dan model rantaian pengetahuan, dan dengan itu, menunjukan bahawa prestasi organisasi boleh dipertingkatkan dengan kegiatan pengurusan. Akhirnya, dapatan menunjukan kesan positif model rantaian pengetahun keatas hubungan antara nilai persaingan dan prestasi organisasi.

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LIST OF ABBREVIATIONS

Competing Values	CV
Competing Values Framework	CVF
Confirmatory Factor Analysis	CFA
Knowledge Chain	KC
Knowledge Chain Activities	KCA
Knowledge Chain Model	KCM
Knowledge Leadership	KL
Knowledge Management	KM
Knowledge Management Activities	KMA
Knowledge Management Practises	KMP
Management Activities	MA
Organisational Activities	OA
Organisational Culture	OC
Organisational Performance	OP

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CHAPTER ONE

INTRODUCTION

1.1. Background of Study

The business world regards organisational competitiveness as its first and main priority, and this has hugely influenced the current global business environment. In order to be competitive, organisations focus mainly on performance indicators, such as investment return, increase in market share, introduction of new products, sales volume and cost reduction (Blumentritt & Johnston, 1999; Kalling, 2003). Adherence to performance indicators in the respective business environments could lead organisations to successfully achieve their objectives, whether in the local, regional or international business environment.

The international business environment has evolved and, in comparison with past decades, it has become faster, more convenient and easier, owing to the infusion of better business strategies, such as, knowledge management. The emergence of knowledge management strategies has drastically altered the business environment. Improvements in communication and storage networks have helped create unique opportunities for knowledge management and other business activities. Hence, people share knowledge, experience, and expertise easily, thereby increasing organisational knowledge, which is one of the intangible resources of organisations. Consequently, new business strategies are contributing knowledge to organisations targeted at improving their overall competitiveness.

Intangible resources are the key components of competitiveness in the business environment, but they are difficult to define due to the presence of subjectivities and the

difficulty of measuring them. Intangible resources contain individual knowledge, organisational and human capital, relationships, skills and capabilities, as well as, reputation of brands, companies and products, networks, competences, quality perceptions and the ability to manage change. Intangible resources are not easily transferable compared to tangible resources, owing largely to difficulty in intangible resource measurement (Haanæs, 1997).

The new business climate increases the role of intangible resources such as, knowledge in organisations regardless of whether they are located in developing or developed economies. Access to intangible resources, such as knowledge management, intellectual capital and knowledge organisation can lead to greater business success. Therefore, the capability of knowledge management practices is crucial in order to gain and retrieve intangible resources. In this case, moving from last generation of management to a new style of management needs much effort for adaptability.

Recently there is slight movement for knowledge management adoption in the developing countries for example, Iran. However, the business environment in Iran seems to be synonymous with and dominated by old management practices. The rapid diffusion of knowledge management (KM) techniques globally results in how much Iranian companies are aware of the impact of knowledge management practices in their business activities, and how effective they are in applying them.

Meanwhile, the prudent management of intangible resources, such as value added and knowledge, underpin the major milestone in the new business environment. Also, knowledge is easily producible, convertible and mobile. One of the main models, which lead to knowledge management practices or activities in an organisation is the knowledge chain model (KCM) as highlighted by Holsapple and Singh (2001). In each organisation, knowledge exists in several forms such as, tacit knowledge, embodied in employees, including experiences and personal capabilities and relevant knowledge, as

well as explicit knowledge such as, documented knowledge, which are in reports and records.

Knowledge management practices seek to promote and facilitate gathering, storing and processing knowledge in organisations. KCM enhances the organisational knowledge by several activities, such as management and organisational activities. There are two reasons why the KCM is applicable to Iranian firms. Firstly, it does not need any specific technologies, such as, the internet, computer, and network communications that do not have broad penetration in Iran, but only requires human behavioural practices rather than sophisticated instruments and high technologies. Secondly, this model is dynamic, and can easily be adapted to the Iranian business context as it is highly influenced by cultural and ethnic considerations.

1.2. Value

Values have an important role in new business activities and have been found to be the major underpinning of business activities (Peat, 2003). Thus, values are regarded as the foundation upon which the edifice of value creation must rest in organisations (Sawhney & Piper, 2002). Values in an organisation reflect the combined values of all employees and align with organisational values. Core values in each organisation provide opportunity for customers and partners to know these values in every interaction. Moreover, the organisation will identify itself from its competitors, regardless of whether these values come from embedded or applied values.

Embedded value refers to values which belong to individuals and come from the organisational external environment. Applied values are defined values of an organisation and employees are expected to follow and apply them in the discharge of your their tasks (Scott, 2002). There are two aspects of the value model used in this thesis: namely, knowledge chain model (KCM) which works with values created by

knowledge activities and the competing values framework (CVF). The adaptability of these two value models underlines this research.

1.2.1. Knowledge Chain

As mentioned above, knowledge is an intangible resource, which enhances competitive advantage in an organisation and scholars have investigated various aspects and their application in organisations. For example, Holsapple and Jones (2004) developed his knowledge chain model by seeking specific knowledge management activities (KMA) which are capable of attaining higher performance in firms. KCM was established in a descriptive KM ontology that was conducted by Delphi method which involved internationally acclaimed KM experts in this field of study (Holsapple & Joshi, 2002). Consequently, with KCM every activity, whether separately or complementarily, could be executed. While creating the basis for differentiation, this can contribute to firm's relative cost advantage, which ultimately helps raise value added in firms. In fact, these activities are the discrete building blocks of organisational competitiveness.

Like Porter’s model, KCM is one of the prominent knowledge management models, which can add knowledge value by several activities (Holsapple, 2005). In the original form of knowledge chain model, activities are divided into two groups, namely, organisational and management activities, which were of crucial importance in achieving competitive advantage.

In majority of the organisations such as service industries, value added can be raised with the right KM activities. In service firms, the main outputs are sold based on both differentiation and cost. Because in services no transformation is made to physical products, and firms are more sensitive to the elements of differentiation and costs than in non service industries.

Therefore, the role of values in the knowledge chain would be considerable because its production is dependent heavily on intangible resources. The value added generated

from the KCM, can clearly synergies all service industries, and the Iranian service sector is no exception. Firms in the Iranian services sector that incorporate KM activities to lower prices and differentiate their services could enjoy competitive advantages over both external and internal nation competitors.

Several empirical studies suggest that value added can affect competitive advantage as well as the components of competitive advantage (Barney, 1991). There is an essential relationship between competitive advantage and firm's performance. Porter (1997) argued that firms hire or recruit highly trained professionals, apply new technologies (such as information technology) to raise their competitive advantage; facilitate the production and delivery of goods and services, and hence, deepen overall organisational performance. Therefore, the infusions of KM activities can raise organisational performance, which is the critical factor underpinning knowledge chain effectiveness for the achievement of competitive advantage.

In order to attain high performance, the Iranian service firms, should be adaptable to the country's business environment, since KCM embodies organisational and managerial activities. It creates a myriad of opportunities for service firms that apply these activities effectively based on organisational capabilities and priorities. (Hart, 1995). Knowledge chain conveys to people in organisations rather than tacit and explicit knowledge that are embedded in humans, physical technologies or hardware. KCM offers Iran's service firms, which are not developed like western industries, an inexpensive but strategic channel for generating and synergising for greater performance.

Other scholars have attempted to introduce more functional models. Nonaka (1994) introduced another dynamic model of knowledge creation with concern of continuous interaction between tacit and explicit knowledge in the organisation. This, however, does not take other components into account vita, such as, organisational and

management activities in organisational knowledge flows. Furthermore, it has no strategic usefulness, as the model is not flexible and adaptable for use in the majority of organisations, whether in developed or developing countries. The Holsapple and Jones (2004) model seem to be a more appropriate model and hence, its adoption in this thesis. The model allows the absorption of the strategic aspects of Porter's (2000) value added model. The adoption of the value chain model supports activities that can be adopted to be used by management or organisational activities.

Furthermore, the adaptability of this model has been proven by several surveys in different industries and business environments, by different measurement for knowledge management practices. This includes knowledge management practice in manufacturing firms in Nigeria (Adeleke & Alegbeleye, 2013) and study of customers and suppliers (Tseng, 2009). A new model like KCM has been recognised as a cognitive system, in which the whole organisation is involved. Therefore, all aspects of the knowledge management activities, actively involve all parts of the organisation.

Given the dynamic nature of the business environment, the dynamic model seems much more applicable than the constant model. Dynamic term here refers to uncertainty in managing style in firms and ethnic group's intentions. In this dynamic discipline, the value added by knowledge management practices would be measurable, and would contribute towards the higher levels of management outcomes in a short as well as long period. Another specification of the KCM is to allocate knowledge resources by organisational activities, which are mainly in the form of acquisition, selection, generation, assimilation, and emission of knowledge. This increases the efficiency of knowledge management in the organisation and, consequently, improves overall performance.

The other aspects of value, that are important for consideration are the values associated with organisation control and internal/external tendency. The intersection of

the high and low control axis with internal/external tendency dimension creates four different quadrants in the organisation, which varies between one another.

1.2.2. Competing Values

Competing values framework (CVF) is a conceptual model for identifying organisational values that are most widely used. This model is divided into two dimensions based on control and environments, high and low control axis and internal/external axis, which provide different value orientation in the organisation. Based on this two dimensional topology, the organisational value can be categorised as clan, market, hierarchy and adhocracy and the study is linked with a "functionalist concern of the organisational effectiveness."

In the competing value model, the emphasis of the clan value is on open human resources, participation, and a sense of family. The emphasis of the adhocracy value is on entrepreneurship, creativity, and adaptability in the organisation by external tendency and low control. The market value emphasises on competition, environmental interaction, and customer orientation with more control and external tendency. The hierarchy value has many rules and regulations with high control and internal tendency. The CVF has several advantages and hence its application in this study. One of them is that, this model allows researchers to identify the cognitive view about values in the organisations, compare values across organisations, and generalise dominant values using higher sample sizes rather than other models, which are discussed in details in the subsequent chapter – the literature review.

The understanding of organisational effectiveness in knowledge management activities, and more particularly, in organisational performance (OP) depends on recognition of the significant organisational dominant values. The dominant values of the organisation are the result of organisational design in term of control extents with high or low intensity, with combination of condition of dealing with external/internal

environment. Although, the main KM enablers criterion is culture as highlighted by the majority of scholars (Machuca & Costa, 2012), the crucial component of culture, which plays the main role in the organisation, is competing values. On one side, the core seeking values in knowledge management activities is knowledge value added and, on the other side are the, competing values, which define an organisation, based on adapted values that employees need to follow. It seems that the adaptability of KCM and CV is more convenient than organisational culture; this however, has not been subjected to any empirical study in previous studies.

1.3. Statement of Problem

The Iranian business environment is rather traditional; hence, Iranian businesses are unable to completely adopt and follow the modern business environment and as such, they are unable to compete globally. There have been difficulties due to disruptive performance, which makes it difficult for them to compete and survive in both regional and global business environments. Inferior performance in service firms is related to the connection between competing values and knowledge management activities (KMA) in models such as knowledge chain model (KCM) in the organisation from one side and KCA with performance on the other side. Furthermore, the application of KCM in Iranian service firms and the assessment of KCA with competing values in the service firms is not obtained (see section 2.11).

Based on previous research in the field of knowledge management, there is wide interest on the enablers of KMP with some components of KMA in the organisations. These enablers include organisational culture (OP), IT strategy, KM processes, leadership evaluation, (Bush & Anderson, 2003). Others are organisational culture, technical and operational (Demarest, 1997) and culture, strategy, organisational learning and measurement (Pan & Scarbrough, 1998).

Although a large number of research topic is on the effect of culture on various knowledge management activities (Davenport & Prusak, 2000; Nonaka & Takeuchi, 1995; Von Krogh et al., 2000), the issue of what kind of values in the competing value that support knowledge management activities, in the organisation has not been addressed. This rises to the question of how much the competing value affects or influences knowledge chain activities.

What is clear is that organisational culture is understandably dependent on national culture of the collated firms. The root of culture depends on individuals from a particular nation employed in various sectors. That is why the majority of researchers measure organisational culture by using the Hofested's measurement scale. These scales are based on a chosen nation's cultural affinity.

Based on the Hofsted studies, culture is defined as "the collective programming of the mind that distinguishes the members of one society from another. This included shared beliefs, values and practices that distinguished one organisation from another" (Hofstede, 1980). Following this definition, Hofstede and his colleagues identified five independent dimensions in national culture, which include power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance and long-term versus short-term orientation. The power distance is "the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally" (Hofstede et al., 1991, p. 28). The other dimension is individualism versus collectivism. Individualism pertains to societies in which loose ties between individuals make people just care about themselves and their immediate families. Collectivism pertains to societies in which people are integrated into strong, cohesive in-groups from birth onwards and keep on protecting each other in exchange for undisputed loyalty throughout their lives (Hofstede, 2010).

Masculinity versus femininity, as another dimension in national culture, is defined as the way in which roles are distributed between genders. Masculinity refers to societies in which social roles are clearly different for men and women, i.e. men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life. Femininity refers to societies in which social roles overlap for genders, i.e. both men and women are supposed to be modest, tender, and concerned with the quality of life (Hofstede, 1998a).

Uncertainty avoidance, which is another aspect of national culture, is defined as "the extent to which the members of a culture feel threatened by uncertain or unknown situations." This feeling is, among other things, expressed through nervous stress and in a need for predictability: a need for written and unwritten rules" (Hofstede, 1998b).

The final dimension in national culture is long-term versus short-term orientation. Cultural values associated with long-term orientation are thrift and perseverance. Values associated with short-term orientation are respect for tradition, fulfilling social obligations, and protecting one's 'face'. Although the values of this dimension are based on the teachings of Confucius, Hofstede, however, believes that the dimension also applies to countries without a Confucian heritage. A long-term orientation mostly found in East Asian countries, such as; in China, Hong Kong, Taiwan, Japan, and South Korea (Hofstede & Bond, 1988).

In Iran, different models are applied when studying organisational culture in different fields of study. It seems that among different models Cameron and Quinn and Denison's models are more popular in Iran based on several researches which are shown in the following tables. Table 1-1 shows some of the researches that do some research on organisational culture based on these two models:

Table 1-1:

Researches on organisational culture in Iran

Organisational Culture Model	Researcher	Year
Cameron and Quinn	Abbassi, et al.	(2010)
	Rahgozar, Gholamzadeh, et al.	(2012)
	Ahmadi, et al., Kouchaki, et al,	(2012)
	Bozorgi-Nezhad, et al. Tabrizi	(2013)
Denison	Chegini	(2013)
	Seyed Javadein	(2010)
	Pirayeh, et al.	(2011)
	Iranzadeh, et al.	(2011)
	Razavi, et al.	(2011)
	Enayati, et al and Shafeai, et al	(2012)
	Mollazadeh Ordaklou	(2013)
	Raadabadi, et al.	(2013)

Source: Author

The Denison model, which consists of four traits, each having three indexes, is shown in Table 1-2. This model is used in different research on organisational culture in Iran.

Table 1-2:

Denison model scales

Index	Scale
Involvement	Empowerment
	Team orientation
	Capability development
Consistency	Core values
	Agreement
	Coordination and integration
Adaptability	Creating change
	Customer focus
	Organisational learning
Mission	Strategic direction and intent
	Goals and objectives
	Vision

Source: Denison (1990)

The accuracy of this model in Iran can be put in doubt because of the following reasons. First, The Iranian economy comprises of three sectors: the state, co-operative, and the private sectors. “Following the Iranian revolution of 1978, all banks and insurance firms and many industrial companies were fully nationalised and their ownerships were transferred under government control” (Bagherpour, 2007) and consequently, public organisations control 80% of Iran’s economy. Therefore, there is no sense of ownership for employees.

Second, because of reduction in “radios trust,” the Iranian people prefer to work with their close friends and relatives. There is no interest in working effectively with others and sharing learning. Besides, Iran is not a collective society. In collectivistic societies, individual goals and interests are not as important as collective goals and interests. Therefore, the societal collectivist practices are of low ranking in Iran and people are more interested in the achievement of individual goals and interests more than collective ones.

Third, each person is deeply embedded in his/her in-groups, and his/her identities are spelled out in the context of their groups. Consequently, individuals count on the support they received from the in-group. The group members have to be cautious not to dismay others and, also, to satisfy others’ expectations thus, resulting in group control. Group members will feel dissatisfied if a member links with different groups. This kind of group strategic alliance and loyalty restrict individual creativity, innovation and free thought.

Fourth, high levels of power distance are reported by Iranian managers in their society. People, in countries with high levels of power distance, learn to obey those in positions of authority without questioning. It is disrespectful and unacceptable to challenge or disagree with a supervisor or to ask questions about the ideas of someone in a high position. The power distance lessens the individual initiative and creativity

because these characteristics need more room for individual differences and open dialogue.

Finally, Iranian managers get used to autocratic leaders who “make decisions without much consultation with their employees.” These employees expect the leader to develop a vision and communicate it to them, regardless of their non-involvement in the elaborate decision making processes which ought to have been based on broad participation.

However, CVF measurement is sticking and come from the organisational effectiveness. In other words, the values are inside oriented, coming from inside of the organisation, not from outside. For instance the first value dimension is associated with organisational focus, from inside, more emphasis on development based on internal capabilities and outside or external opportunities or chance which stress on growth and developing based on external opportunities and chances.

The second value dimension is related to organisational structure, from stress on stability or high control to stress on flexibility, less control. Quinn and Rohrbaugh (1981) pointed out that these two sets of competing values are recognised dilemmas in the organisational literature. These dilemmas in somehow may relate to adaptable and appropriate values to the knowledge chain model.

Further motivation for this study is recognition and diagnosis of the assumptions. By competing value assessment in the service firms, they have a better insight of their produced values in their organisations. With this perspective, it may lead to promote organisations.

1.3.1. Non-conformance Performance

This section explains some aspects of inferior performance with two perspectives; macro and micro scale. In the macro scale of view, the country’s low performance assessed and, in small scale of view, the service firms’ behaviour, which is associated

with the inner side of the firms, is studied. Each firm or organisation affected by its own environments. Therefore, this study looks at organisational performance in the country and then it reviews the services firm's performance using empirical evidence.

In macro level study, the problem of organisational performance is linked with overall country's insufficient performance and government responsibility would be balanced the infrastructure facilities for better organisational performance. The government in Iran aims to be associated with various social development programs, adopted by the international community members. For instance, the First and the Second Five-Year National Development Plans are carried out between 1989-1993 and 1994-1999. These programs were followed by the development plan (1988-1993) called "Iran 1400" (Iranian version of Malaysia's Vision 2020), intended to enhance the performance of various industries.

During the first five-year plan (1988-1993), the average annual growth rate in GDP was 7.3 percent, which was slightly lower than the target value of 8.1 percent (Valadkhani, 2001) and the degree of capital utilization was 40 % at the end of the 1980s (Amuzegar, 1997). The performance of the industrial service sector was abysmal, due in part to the lack of strategic alignments, management and modern usage of a new generation of management techniques such as knowledge management.

As mentioned earlier, there are micro aspects of poor performance, which is the main reason of poor performance of service firms in Iran. The United States office of personnel management and office of workforce relations defines performance as the failure of the employees to do their job to a standard or acceptable level (Ingraham et al., 2000). Based on this definition, it can be observed that the Iranian service firms, such as academic institutions, financial institutions and telecommunication firms are in performance shape. This is evident in the financial performance of the stock markets as measured by the low rate of growth in market share and market growth.

According to Milers and Snow (1978), the main component of organisational performance is efficiency. Table 1-3 illustrates the rate of productivity in various Iranian service firms from 1998 to 2007. Based on this table, the performance of the Iranian industries demonstrates low, and in some years, negative growth. Particularly, other service sectors, including education and finance sectors, showed the abysmal efficiency of zero between 2006 and 2007. The efficiency level of other sectors of the Iranian industry, such as transportation, sorting and communications, fluctuated between -2.6 to -2.7, from 1998 to 2003. This evidence suggests that the communication industry performs unsatisfactorily.

In order to show the organisational performance status in Iranian service firms, there are two main components: productivity and efficiency of the firms (Boland & Fowler, 2000). Since the efficiency is a more appropriate indicator of performance, Table 1-3 demonstrates the efficiency of Iranian service industries. It can be observed that the efficiency fluctuates and is not stable. For instance, in 2000, it becomes negative, while in 2006 and 2007, it is zero in the service firm industries.

Table 1-3:

Efficiency of service industries in Iran

Years	Construction	Transportation, sorting and communication	Other services	Total economy
1997	-8.7	-2.9	1.6	**0**
1998	-5.1	-2.6	0.1	**0**
1999	11.4	5.5	-1.8	**-1.5**
2000	5.8	-2.6	-0.9	**0.9**
2001	7.0	-2.5	1.0	**-1.2**
2002	8.1	-1.4	1.2	**2.6**
2003	-1.4	-2.7	1.5	**2.8**
2004	-10.9	0.3	3.1	**0.8**
2005	-4.3	1.0	1.5	**1.7**
2006	-3.3	6.0	0.0	**1.3**
2007	12.6	5.4	0.0	**0.9**

Source: The Central bank of Iran (2007)

Moreover, the figures 1-1 and 1-2 show service sector performance with the study of the relationship between the services sector's share of GDP and service sector employment share versus per capita GDP for 12 Asian countries, respectively. The Asian development bank has broad and reliable research in the service firm's performance. Therefore, this study applies their result to support and show the situation of service firm's performance in Iran.

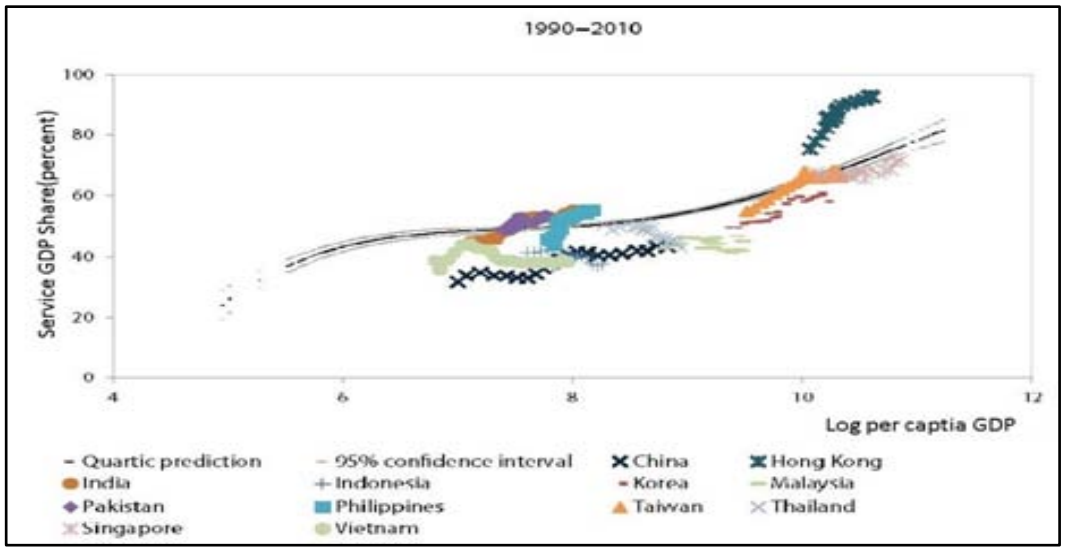

Figure 1-1: Services sector GDP share and per capita GDP for 12 Asian countries

Source: Park and Shin (2012)

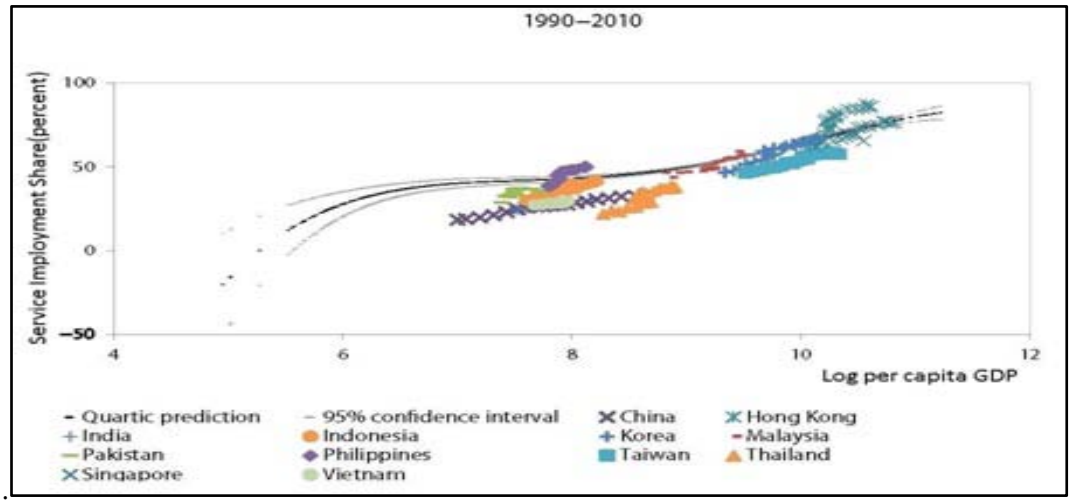

Figure 1-2 : Services sector employment share and per capita GDP for 12countries

Source: Park and Shin (2012)

Figures 1-1- and 1-2 can be used to interpret the services sector performance. For instance, if the share of the country's employment in service is on the predicted line, but its share of service GDP lies under the predicted line, we can conclude that, its services sector workforce produces less GDP. This demonstrates that the service sectors perform poorly. Based on this line, the findings indicate that there are broadly three classes of countries; countries with better performance in services sectors than the international

standards or norm, such as Hong Kong, India, and Pakistan, countries which operate more or less on line with the international norm on services sector performance, such as China, the Philippines, and Vietnam, and, finally, countries that services sector's performance is worse than the international norm, such as Korea and Thailand.

Based on Asian Productivity Organisation (APO), productivity data-book, Iranian per capita GDP is categorized in the same group as Malaysia, Thailand, Bahrain, and Saudi Arabia. More accurately, Iranian per capita log GDP changes from 7.51 to 8.45. Besides, service sector GDP share ranges between 26% to 44 % and service sector employment share ranges from 44.3% to 46.5%. This shows that service sector employment share lies on the predicted line and service sector GDP share lies under the predicted line, suggesting poor performance in Iranian service firm.

1.3.2. Performance, Competing Values and Knowledge Chain Model

Knowledge is an intangible asset which enhances organisational performance (Davenport & Prusak, 2000; Nonaka & Takeuchi, 1995; Von Krogh et al., 2000). Knowledge activities or practices can stimulate individual knowledge which can, in turn, affect the organisation and enhance the organisational performance (Liao et al., 2007). Knowledge activities form a chain, which is produced by knowledge management activities and may highly influence the overall efficiency and performance of an organisation (Deeds & Decarolis, 1999). These activities may have several effects in the organisation, such as competitive advantage, raising overall performance and adequate learning within the organisation. When the level of knowledge changes in an organisation, it affects creativity, innovation, productivity and efficiency. Despite the presence of traditional recourse in firms, such as capital land and workforce, knowledge has been found to have an indelible effect on productivity, efficiency and performance (Geisler & Wickramasighe, 2009).

There are several studies in the field of knowledge management, which are empirically focused on the relationship between knowledge management and organisational performance (Lee and Choi (2003); Hansen et al. (1999)). These studies suggest that one of the alternative solutions to improve performance in a modern economy, such as Iran, is utilizing new business management strategies such as the knowledge chain model.

Organisational culture is one of the main and crucial prerequisites of knowledge management activities, which can support and stimulate the organisational performance, Alavi et al. (2006). The lack of sufficient concern for organisational culture can lead to failure of knowledge management practices (Prajogo & Mcdermott, 2005). Although, there are several empirical studies assessing the relationship between organisational culture and KMA (Alavi et al., 2006), it is clear that culture is a wider concept than values in the organisation. Culture can be defined as a combination of values, beliefs or notions, assumptions, and symbols in the organisation, which explains the way in which a firm conducts its business (Barney, 1986). However, value is a more precise element in the organisation. It is seen as an enabler or prerequisite variable which affects KMA, especially, when these values emanate from the overall behaviour of the people and the structure of organisational effectiveness.

In developed countries, a wide range of organisational culture definitions and measurements have been conducted in empirical researches on the knowledge activities (Chiesa & Manzini, 1998; Numprasertchai & Igel, 2005). However, the four competing values are more applicable in Iranian service firms since values which come from the organisational efficiency and structure would be more reliable than the range of opinion, belief and faith of the individual in an organisation.

Based on Cameron & Quinn (1999) model, each organisation has the tendency to choose some extent of values. This raises the question of which values in Iranian service

enterprises have a significant relationship with knowledge chain activities and can result in change overall organisational performance.

In Iran, the knowledge chain model is not commonly applied. This is largely, due to lack of sufficient awareness about embedded competing values in organisations. Based on the kind of dominant values in organisations, knowledge management activities in the knowledge chain model could be adapted conveniently.

Competing value has the capability to influence KMA in knowledge intensive firms. However, this needs initial knowledge infrastructure to be adapted for maximum efficiency. Knowledge management infrastructure seems to be in an evolution state in Iran and, combined with culture, can influence organisational performance.

Overall, the poor performance of Iranian service firms is due to several interrelated factors, such as, the inability of local firms to incorporate a new generation of management practices, such as KCM. Although, Iran has one of the largest service sectors in the Middle East, its service firms suffer from the lack of awareness of effective relationships between KCM and CVM. This may be the reason behind the poor performance records of service firms in Iran in comparison with similar firms in neighbouring developing countries that have adapted and incorporated KCM in their business approaches. Another glaring problem is the non-existence of competing value enhancement in Iran, which is a prerequisite for KCM. In addition, having a more transparent competing value is beneficial in the implementation of KCM, as it facilitates the organisational activities and promotes the maximum utility value in organisations.

1.4. Research Questions

The problems mentioned above raise several important questions, which need to be answered through empirical evidence. Therefore, the research questions underpinning this study are:

1. What is the relationship between CV and MA, OA within KCM?

2. What is the relationship between MA and OA in KCM?

3. What is the relationship between KCM, CV and OP in the firms?

4. Does MA within KCM mediate the relationship between OA and CV?

5. Does KCA mediate the relationship between CV and OP?

1.5. Research Objectives

The purpose of this study is to look into the knowledge chain model and find out how it influences performance in knowledge intensive firms with supportive competing values in Iran. Knowledge intensive operations depend strictly on professional knowledge. The main concern of service firms is to provide knowledge-intensive support for their business activities in the organisations. As a result, their employees' tendencies are diverted to experts (Rylander & Peppard, 2005).

In Iran, knowledge intensive firms include service firms, education and financial firms. Owing to the tendency to compete and revitalize in their respective sectors, the application of new management practices, such as, the knowledge chain, would increase organisational performance. This study tests the relationship between competing values, knowledge chain activities and organisational performance in knowledge intensive service firms. It focuses on service firms in Iran and tries to analysis the mediating effects of management activities and knowledge chain activities, between competing values and organisational activities and organisational performance correspondingly. In addition, the study seeks to determine the relationship between competing values and organisational performance

The analysis unit of this study is the organisation. The main objectives of this research are to examine the values created by the CVF constructs, as these values may manipulate the knowledge chain practice for better performance in Iranian service firms. Another objective is to explore how CVF influences organisational performance. These objectives are accomplished by identifying the practices in a different context, and

evaluating its effect on the service sector in Iran. This is followed by examining the consequences of these practices to OP. In line with the above, the specific objectives of this study are as below:

1. To examine the relationship between CV and MA of KCM.
2. To test whether the CV constructs have a statistical relationship with OA of KCM.
3. To verify the relationship between MA and OA of KCM.
4. To verify the relationship between KCM and OP in the firms.
5. To verify the relationship between CV and OP.
6. To verify the MA of KCM mediate the relationship between OA and CV.
7. To identify of KCM mediates the relationship between CV and OP.

1.6. Scope of Study

This study confined to the knowledge intensive branches of the service sector in Iran. The following section provides the justification for considering the Iranian service industries in this research.

The Iranian economy is the 26th largest in the world by gross domestic product GDP, and the seventeenth largest by purchasing power parity (PPP) (Athari, 2011). It is mixed and in transition, and about 50% of its large public sector is centrally planned by the government. It is also a diversified economy and over 40 industries are directly involved in the Tehran Stock Exchange. Besides, as one of the oil-rich counties, the majority of government revenue is the export of petroleum and petrochemical products (Ilias, 2008).

1.6.1. Service Firms in Iran

A unique feature of Iran's economy is combined budgets, making up more than 30% of central government spending. Iran is one of the few major economies that have no

serious damage in the aftermath of the 2008 global financial crisis. Since 1960, the economy has focused on service sectors. In most developed countries, the service sector has the highest share in GDP in comparison to the other sectors. In developing countries, such as Iran, the share of the service sector in the economy has an increasing trend.

The Iranian service sector are classified into four sub-sector, services producers, services distributors, services public and services individuals, by Azad et al. (2011) Service producers include banking, insurance, real estate, accounting, legal, etc. Transport, communication, storage facilities, sales etc. are included in distributive services. Social services cover health, education, hospitals, postal service, police etc. Personal service includes hotels, repair services, entertainment and recreation etc.

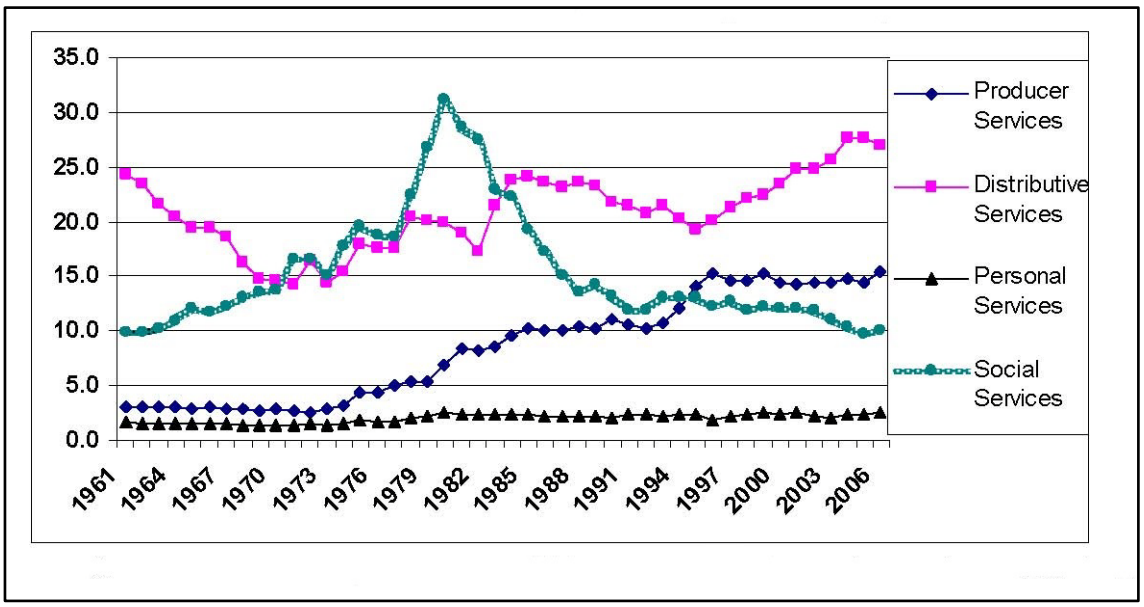

Figure 1-3 : The share of service sector value added in Iran

Sources: Azad et.al. (2010)

Based on Azad et al. (2011), the period of 1961 to 2006, is divided into 6 sub-periods. During all this sub-periods of time, the average share of distributive service is higher than social, personal and producer services, except the second and the third sub-periods. Share of social services, during this time, is higher than others since Iran was in

a special economic situation because of Islamic revolution and imposed war and increase in social service depends on the political situation than the market mechanism.

As can be seen in Figure 1-3, the distributive, producer and social services are, respectively, the main parts of the service sector in Iran. In this research, one service sector is chosen from each category to represent service sectors in Iran. In this case, this study selected telecommunication from distributive services, banking from producer and education from social services. These sectors of service industries in Iran are more relevant to this study based on their awareness of knowledge management and they are more reliable based on their competitiveness in the market for finding and adapting new technologies to their business. Tehran service firms are chosen as the sample considered in this study because all the main representative educational, financial and telecommunication firms of Iran are located in Tehran.

1.7. Significance of Study

The findings of this study will be significant in strengthening the knowledge management literature. First, it can broaden the concept of KCA to relevant KVF component and introduced the concept of component values of KC and CV. Second, it can also open the gate of KCA in Iranian service firms. Since there is a dearth of empirical research in this field of study, it raises the awareness of the organisational leaders as it concerns new business management activities such as KMA in Iranian service firms and, identify significant components of the CVF element in supporting or traversing the KA of KCM.

Third, it is clear that the key role for KMA are the individuals in the organisation with their particular accumulated values aligning with organisational values, which can either support or hamper KA in KCM. In other words, values have a key role in the organisation for knowledge resource. The CVF realises and analyses the organisation in advance, and it can promote or facilitate knowledge flow of KA in the organisation.

CVF analysis can help the management to identify the dominant values of the organisation and identify which competing values have a significant relation with KMA. Consequently, top management could leverage on this to promote KMA initiatives by relevant activities first and then followed by the other KCA since based on KCM design there is no compulsory sequence of the implementation of KCA.

Fourth and finally, it seeks to clarify further role of the MA in KCM and CV. The supporting behaviour of MA of KCM can have effects on OA rather than OP and there is a need for the clarification of MA, which this thesis attempts to tackle. Furthermore, it identifies the role of KCM in promoting or denying OP and could be a guide for organisational leaders in their decisions making processes.

1.8. Thesis Outline

The study is presented in seven chapters as summarized in the Figure 1-4. The current chapter is devoted to the introduction of this research. Background, value, motivation, research questions and objectives, scope of study and significance of study were briefly discussed in this chapter.

Chapter two deals with literature review, theoretical framework and hypothesis development. In this chapter, the literature review related to the constructs of the competing values framework, knowledge chain model, organizational performance and the studied relationships were presented present between these constructs. Along with the underlying theories and framework, the hypotheses, which are studied in this research, are formulated. Finally, the literature review of empirical studies on some of the considered relationships was presented.

Description of the methods used in this research appears in the methodological chapter, Chapter Three. Methodological issues such as justification of research methods and design, research philosophy, approach, strategy and design, measurement of research variables, statistical analysis methods (including personal background,

structural equation model, path diagram, reliability and validity) are described in this chapter.

The next three chapters are devoted to analysis of the data. In these chapters, it will be tried to answer the research questions, presented in chapter two.

The first part of chapter four deals with data screening and coding, sample characteristics, measurement model and reliability and validity of the data. In the second part, the direct relationships between competing value and primary and secondary activities of knowledge chain model (OA and MA) are studied. Moreover, the existence of a statistically significant relationship between CV and OP is tested.

Chapter five is devoted to examining the relationship between MA and OA of KC. Besides, the existence of a statistically significant relationship between OA of KC and OP is studied.

The results of testing the mediating effects are presented in chapter six. Testing hypothesis is conducted, using structural equation modelling, to find out whether MA has a mediating effect on the relationship between CV and OA. Moreover, this research tries to discover whether KC has a mediating effect between CV and OP.

Finally, chapter seven covers the discussion of the results and concluding remarks along with the study's contribution to theory, policy and business, the limitations of the study and suggestion for future research.

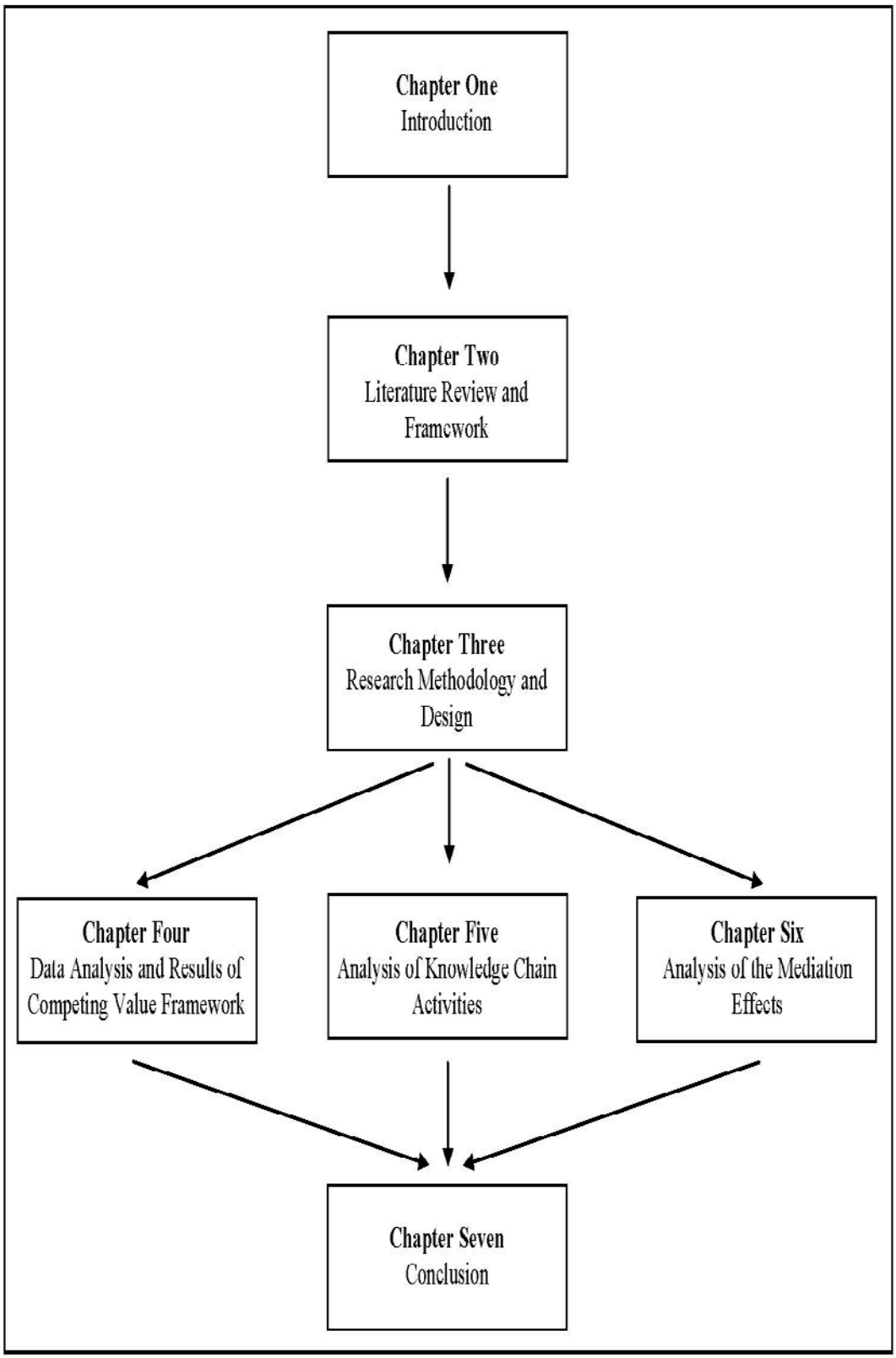

Figure 1-4 : Thesis Outline

Source: Author

CHAPTER TWO

LITERATURE REVIEW AND FRAMEWORK

2.1. Introduction

This chapter presents the literature review and theoretical underpinnings of the study emphasizing the KCM, CVF and OP variables as considered in this research. It starts with the main approaches and frameworks of knowledge, KCM, and evolution of the KCM. In the KCM, the components comprise of primary and secondary activities, which are managerial and organisational activities and support knowledge flow in an organisation.

2.2. Knowledge

Knowledge is widely recognised as a fundamental strategic resource and lynchpin for the accomplishment and maintenance of competitive advantages in firms (Hult et al., 2006). This viewpoint is commonly applied in literature, and various definitions and perspectives for knowledge are fully enunciated (Mcadam & Mccreedy, 1999). This section begins with the knowledge concepts, and explains some knowledge epistemology with theoretical support of KCM.

Plato, as a one of the most former scholars, in order to clarify knowledge, stated the impression of knowledge as "justified, real and true belief" "(Gulley, 1986, p. 14), which in turn leads to value added in the society, community and organisations. This viewpoint has been widely adopted by some scholars like most recent century philosophers and western rationalism (Descartes, 1911) and German philosophers (Kant, 1965; Marx, 1976).

Other definitive approaches view the concept of knowledge through data information. Glaringly being different in obvious points, the terms "knowledge" and "information" are commonly used interchangeably in colloquial wording. Knowledge deals with data, information, action, and wisdom. Here, data are formed by discovering items that are previously unknown in one's environment and information is composed of different data added that form for particular content (Zack, 1999).

"Knowledge is power" is the quote of the Francis Bacon (Rodrígez 2001). This power comes from basic resources, in order to preserve organisational or individual legacies, which are new ways of thinking, solving problems, and creating the new situations for now and future. The method of attaining and handling knowledge has become an important concern of knowledge management (KM) community in the past few decades, and stimulated mangers to evolve a wide range of technologies and applications for both research and academic purposes.

2.2.1. Classification of Knowledge

Discussion on KM began from the period of 1990 to 1995, featuring the major attempts to clarify particular aspects of knowledge, such as specifications, benefits and the formulation of the practical KM model (Quinn, 1992; Senge, 1990). From 1996 until now, KM generation, as the second phase, has made many organisations learned from the concept of KM. These organisations have applied KM on various issues, like the philosophy of business (Spender, 1996; Thierauf, 1999) and system perspectives, (Alavi & Leidner, 1999; Hasan & Gould, 2003).

The development of KM frameworks, such as Holsapple's framework, is the result of attempts made by some groups of scholars (Chua, 2003; 1997; Maier & Remus, 2002). The focus of this thesis is on Holsapple's framework for KCM, with the KM concept as practiced by authors such as (Rajan, 1999). The last group is concerned with KM as a modern technology (Carneiro, 2000; Liao, 2003).

The first and second KM generations are different due to the diversity of the scale and the degree of KM application in the organisation and perspectives (Wiig, 2002), while the last generation of KM emphasises the connection between practical and theoretical aspects of KM (Paraponaris, 2003). Lately, KM is associated with enterprise's long-term perspectives, such as the philosophy of the organisation which lead to strategy, mission, goals, vision, actions and processes, which is tried to be a part of employees' daily work-life and impetus.

2.3. Knowledge Chain Model

In comparison with other terms in the field of knowledge management, such as 'knowledge management system' (Mintzberg, 1990) or 'knowledge creation' (Coyle & Coyle, 1977), the term 'knowledge chain' can be considered as comparatively new. Therefore, this concept has not been fully applied in different industries, particularly service firms, and there is a gap in this field.

As a relatively new term, many attempts have been made to define and interpret the knowledge chain in different ways. These attempts led to various definitions of knowledge chain, emphasising its degree of coverage. In order to put the knowledge chain into contextual perspective, a taxonomical analysis is necessary as it would illuminate the effect of research variables and consequences.

Since the knowledge chain is consisted of a subset of knowledge management practices, the conception of knowledge management practice would be beneficial while studying the knowledge chain. Several approaches of KMA support the background of the knowledge chain model; it highlights the knowledge management development in the third generation of KM. This would be fully explained in the subsequent sections that deal with the classification of knowledge management. The essential element of KM is premised on knowledge capability of organisations.

Among the various definitions of KCM, this thesis adopted Holsapple's approach which defines KCM as a combination of nine essential activities undertaken by a knowledge-driven firms and results in competitive advantage and better performance (Holsapple & Joshi, 2001). These critical activities come from the knowledge management ontology of phenomena, which was collaboratively designed with a wide range of international KM experts (Holsapple & Joshi, 2002). This model like Porter's (2000) value chain model is the basic tool used in diagnosing, recognizing and enhancing competitive advantage of firms.

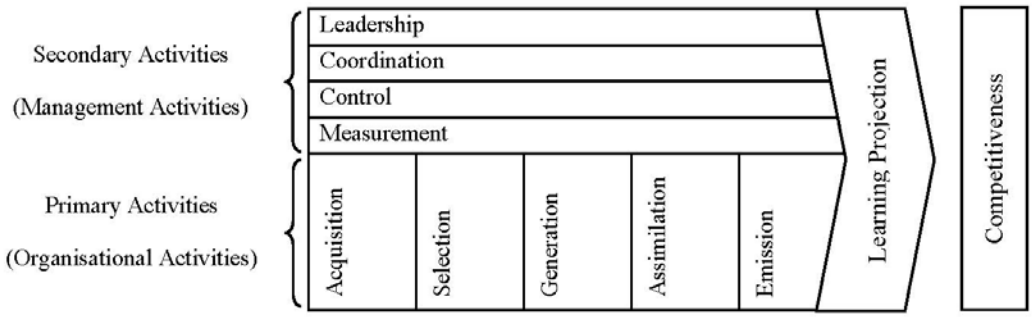

Figure 2-1: Knowledge chain model

Source: Holsapple and Jones (2004)

KCM is supported by several empirical studies in the field of KM. This model shows a relationship between each of the KM activities and organisational competitiveness like performance. The identification of each KMA element is crucial to help formulating an organisation's strategy which results in competitive advantage and, consequently, better performance.

The activities of KCM may happen simultaneously or consequently, for example, in MA, such as knowledge leadership, coordination, control and measurement occur consequently or simultaneously based on availability of requirements in the firm, like

management activities which may happen consequently or even in loop where several forms of combination in the condition of organisational operations.

Each firm is embedded with elaborate knowledge resources that are difficult to acquire and imitate. Therefore, managing these resources is an irreplaceable capability. Besides, effective KMA, like other resources in the firms, promotes KM, which contributes to firm's goals.

KCM is able to improve, transfer, promote and manipulate the resources of knowledge in the firm. To show KMA capabilities in KCM, Tanriverdi (2006) studied KM capabilities which are able to enhance knowledge for products, customers and operations. In each field, the knowledge activities' capability is divided into knowledge innovation, and integration. Gold et al. (2001) considered knowledge practices as a process of ability to support knowledge foundation facilities.

2.3.1. Knowledge Chain: Primary Activities

The foundation of the knowledge chain model is KM ontology, which was established by a panel of international KM scholars and practitioners (Joshi, 1998). The object of KCM includes five primary activities or organisational activities (OA) and four secondary activities or management activities (MA). These OA are responsible as knowledge processors in an organisation to accomplish activities for manipulating knowledge assets and better knowledge basis in the firm. The OA are funded regarding KM ontology as the five basic KM activities. These actions are consisted of knowledge acquisition, selection, generation, assimilation, and emission.

2.3.1.1. Knowledge Acquisition

Knowledge acquisition is described as the adoption of organising knowledge from the external environment of the organisations, which has normally happened in two ways; direct or indirect (Kuhn, 2000). The direct way requires a clear recognition and understanding of the available knowledge in the external environment. It commences

with capturing recognised knowledge from external sources and continues through the organisation. Knowledge acquisition transfers the captured knowledge to the organisation. Examples of knowledge acquisition include gathering information from competitors, hiring professional consultants in the field of activities, and collecting suppliers and customers' crucial information. The other way of knowledge acquisition, is adopted indirectly in an organisation by establishing an agreement or a joint venture with other organisations involved in knowledge transaction and improving business goals by adopting new technologies. These will result in the enrichment of the company's knowledge.

Knowledge acquisition can be supported by competing values in an organisation based on the tendency of organisational values, which drives market, adhocracy, hierarchy and clan (Giberson et al., 2009).

2.3.1.2. Knowledge Selection

Knowledge selection refers to the selecting required knowledge, which is available in the organisation (Jennex & Olfman, 2002). This activity is able to enhance and improve knowledge acquisition. As it is mentioned earlier, knowledge acquisition chasing external environment of the organisation for the right, relevant and appropriate knowledge, however knowledge selection looking for the inside of the organisation for appropriate and required knowledge should be aligned with the goals, mission and vision of the organisation. According to (Smith & Mckeen, 2003) knowledge selection is divided up to two section; action and archival. Action section shows the retrieved knowledge comes from the inside of the organisation, which is including communication network and knowledge transfer methods. On the other hand, archiving section including recollecting a certain memory in the organisation, like success stories, recollecting the required information from records, and the collection of needed

knowledge from internal resources (Fedor et al., 2003). Competing values with creating alternation values in the organisation is able to support knowledge selection**.**

2.3.1.3. Knowledge Generation

Knowledge generation is defined as knowledge production by excavation the existing knowledge sources in the firms (Amidon & Macnamara, 2003). For instance, these activities include intellectual assets' improvement, knowledge practice development, information collection and knowledge creation via knowledge discovery (Lin et al., 2001). Some other practicable activities in knowledge generation are knowledge derivation, improvement of the experience process, selecting and performing pilot studies and knowledge creation by learning lesson subjects in the repository.

2.3.1.4. Knowledge Assimilation

Knowledge assimilation refers to a group of activities which change the organisational knowledge resource status with internal, sorting, selecting, distributing, and generalising knowledge (Liebowitz et al., 2002). The flow of knowledge will be improved by applying knowledge assimilation into the organisation, which in turn will affect the state of knowledge. Knowledge assimilation, which includes assessment, filtering and testing required knowledge in the organisation, is divided into two main parts; publishing and interaction (Liebowitz, 2004). Publishing has two portions, called formal and informal. The formal section is explained in the assimilation method, whereas informal section refers to the adhocracy structure in the organisation that recommends knowledge transfer. Formal publishing includes processes such as publishing policy manuals for the organisation and circling the new policies of the organisation via e-mail. Knowledge assimilation may enhance in organisations by utilizing intranet systems, which leads to successful knowledge transfer within an organisation.

Interaction knowledge, as a part of knowledge assimilation, embraces of multidirectional mediums used to transfer knowledge within an organisation (Jennex & Olfman, 2003). Training and instructing the employees in an organisation and interactive effort for knowledge assimilation can be named as examples of these mediums. Interaction knowledge also has two dimensions; formal and informal. Formal internal interaction includes different activities within the organisation, such as training employees in the organisation, applying new knowledge in the decision-making processes and improving the intranet networking tools to capture, share and integrate knowledge into an organisation (Nidumolu et al., 2001). Informal assimilation consists of activities such as interacting, mentoring, interpersonal communication, knowledge distribution via social communication media, and observing behaviours of participants in an organisation.

2.3.1.5. Knowledge Emission

Knowledge emission is known as stored knowledge, which can be transfer to the external environment, or in more simple terms, it includes embedding as well as utilizing knowledge into the outflow of an organisation for external release or circulation (Joshi, 1998). Knowledge emission has two main classes, published and interaction and both include formal and informal forms (Bose, 2003). Formal publishing, such as advertising in the media, market research publishing and introducing a new pack of service or production, includes activities that may performed formally in the external environment in order to emit knowledge for a particular purpose. The main intention of informal publishing of knowledge emission is producing knowledge for external emission, which includes activities such as advertisement in public announcements and informal representation of public activities.

Formal emission interaction means knowledge distribution using activities such as technical support, organisational activities' presentations, and joint ventures. Finally,

informal emission is like a storytelling session, where the storyteller tells the detailed story in an informal setting to their prospective customers (Skyrme, 2003).

2.3.2. Secondary Activities of Knowledge Chain

The knowledge chain model was established as one-step in comprehending the link between KCM and organisational performance and competitive advantage. As mentioned before, this model consists of five primary and four secondary activities, which are considered as essential points for improving competitiveness and are supported by academic and empirical results (Holsapple & Jones, 2005). The primary activities or organisational activities of KCM are explored in section 2.3.2. Here, management activities or secondary activities of KCM are studied in more detail, which consist of leadership, coordination, control and measurement.

2.3.2.1. Knowledge Leadership

In knowledge chain model, knowledge leadership has been realized as one of the MA that facilitates knowledge flow within an organisation (Clyde & Kiku, 2005). Leadership is associated with two different concepts in KCM and organisations. Knowledge Leadership (KL) act as an accelerator of knowledge workers, however, in an organisation, leadership refers to the person who set goals and direction of the organisation as a single entity (Mehta, 2012).

The leadership concerns in KL are clearly expressed by Amidon and Macnamara (2003), which include matter of context, competence, culture, communities, conversations, communications, and coaching (Amidon & Macnamara, 2003). All of these factors will be subsequently discussed.

In context matter, leadership sets a direction for the employees in an organisation (Massey et al., 2002). It integrates the people's intention, which can be adapted with the purpose of knowledge activities. In addition, this sets a new organisational development (House et al., 2002).

The other element of KL, which is affected by competing values, is competency, which is one of the important factors in competitive advantage. In fact, knowledge leadership prepares the path to competency via guidelines and advises (Holsapple & Joshi, 2001). Prevailed organisational values can produce remarkable competence in an organisation.

Culture matter refers to the knowledge leaders' capability to influence the employees behaviour within their respective organisations. According Bollinger and Smith's (2001) knowledge leaders establish the required factors that lead the success or failure of knowledge activities by their critical roles in value benchmarking.

Communities matter explains that leaders set an effective way of communication that is essential in knowledge flow within an organisation (Müller-Prothmann, 2006) Communities matter makes sure that knowledge flows between employees in various forms, such as discussion and sharing experience. This point of view suggests that KL plays an indisputable role in offering and facilitating flow of knowledge in an organisation. Therefore, KL can encourage employees to engage in frequent meetings and adopt new communication structures and open the way for an effective communication in knowledge sharing. Moreover, it may enhance communication by applying new technologies such as video conferencing, computer networking, and e-commerce by supporting competing values.

Today, uncertain environmental factors, such as competitive environments, lead to planning the organisation communication. Therefore, communication manners need to be supported and integrated by competing values to improve the human role in the flow of knowledge within an organisation (Anvari et al., 2011; Conway & Schaller, 2007).

2.3.2.2. Knowledge Coordination

Knowledge coordination is managing the relations and dependencies between several interchangeable activities, such as knowledge resources of MA, to determine proper

processes (Eisenhart, 2001). More precisely, it helps to ensure about adequate performance of available resources at the allocated times and places. In knowledge coordination, pragmatic actions are required to arrange adequate skills for knowledge activities, navigate these activities by time and in alignment with KA processes and organisational goals.

Knowledge coordination activities comprise of structural and security attempts. In the security section, knowledge coordination settles rewards and performance evaluation processes for organisational knowledge sharing (Wiig & Jooste, 2004). This activity needs to ensure that people, in the organisation, are adequately stocked in the knowledge sharing process, and have enough intensity for knowledge sharing.

2.3.2.3. Knowledge Control

Knowledge control is the process guaranteeing continuity and the availability of the knowledge resources with the proper quality (O'dell, 2000). In MA, control is a substantial issue due to the value of knowledge, which should be driven from high knowledge quality resources. Another perspective of knowledge control is security; it involves less retrogression, consents exposure and limitations. (O'dell et al., 2000)

Two main groups of tasks for knowledge control are governance of controls and processes (Puga & Trefler, 2002). Knowledge resources monitor group activities, including managing cost of intellectual properties, which intensively supports knowledge sources. On the other hand, government aspects enhance the process of knowledge flow in the organisation, and it suggests analysing deficiencies of the knowledge flow. Examples of knowledge control is the control of financial sources for KM support and ensuring about KM’s process by high knowledge quantity, accurate meaning, and precise knowledge (O’dell & Jackson Grayson, 2001).

2.3.2.4. Knowledge Measurement

Knowledge measurement is specified as the evaluation of the knowledge values, which are applied in knowledge resources. Moreover, the knowledge measurement describes how and what should be measured, and which framework can be the best for knowledge measurement in the organisation (Ahmed et al., 1999). Knowledge measurement proceeds by quantitative and qualitative methods for assessing performance (Mclaughlin, 2007). It also includes the evaluation of value added processes, KM operational assessment, and analysing the effect of an OA of KC on the KCM performance (Holsapple & Singh, 2001).

Determining and applying measurements are two groups of activities involved in knowledge measurement (Hanley & Malafsky, 2004). Determining or developing measurement in knowledge measurements explains about the quality, quantity, benchmarks, and content of measurement. Moreover, critical success factors should be arranged together to adjust the advance performance indicators (Stevens, 2000). Assessing KM abilities involves the knowledge measurement of the people in the organisation, and requires adequate corresponding infrastructures.

2.4. Knowledge Management Activities and Performance

The most important role of KMA in the organization refers to the outcomes such as performance. The way that KMA can enhance the performance in the organisation is through the direct improvement of organizational processes, such as decision-making, innovation and individual and organisational learning. These in turn will lead to improving intermediate outcomes of organizational processes, such as better decisions, developed organizational behaviours, services, products and relationships which can lead to enhanced organizational performance. Previously, the attention of the scholars and practitioners was drawn to see how KMA affects performance of firms. Although, former studies concentrate on KM practise, KM strategies and KM creation, this study

is concerned with KMA in KCM and considers previous studies as underpin elements , because the components are the same. For example, knowledge assimilation or internalization, emission or externalization, acquisition and generation are the same components of KMA for KCM in this research.

Some studies have attempted to explain the relation between knowledge management activities and performance in an organisation and some others involved competitive environment and industrial conditions. Regarding this issue, instead of measuring the value of knowledge directly, Chang and Ahn assessed the contribution of KM to business performance (Chang & Ahn, 2005) by using processes and products as intermediaries. Product knowledge directly represents company's specific product. Process knowledge associates with activities that perform at each stage of knowledge which create value chain. The next group believes that financial performance would be an appropriate model for assessing performance in the organisation. In the same way, Holt and his colleagues applied four metrics to access organizational knowledge, including individual, content, context, and process of knowledge measures (Holt et al., 2007).

Gold et al. (2001) studied the impact of two important aspects of organisational capability, i.e., knowledge infrastructure and knowledge process capabilities on organisational effectiveness. The considered dimensions of knowledge infrastructure capability were technology, structure and culture and the dimensions of knowledge process capability included acquisition, application, conversion and protection. The results show that technology, structure and culture are strongly linked to infrastructure capability, which demonstrates the effectiveness of infrastructure capabilities. Moreover, the results are indicative of strong relations between infrastructure, process capabilities and organisational performance.

The research conducted by Lee and Choi (2003) looked at knowledge management enablers, knowledge management processes, and organizational performance, as three major factors of managing knowledge. Four enablers which are incorporated into the research included culture (collaboration, trust and learning), people (T-shaped skills), structure (centralisation and formalisation) and IT (IT support). Besides, knowledge management process was measured in terms of knowledge creation (socialisation, externalisation, combination and internalisation) and organisational creativity was considered as an intermediate outcome of knowledge creation. The results showed the socialization, internalisation and externalisation were positively related to collaboration and negatively related to centralisation. Trust was significantly related to all knowledge creation modes and learning was related to socialization and internalisation. There was no relation between formalization and T-shaped skills and knowledge creation. Moreover, knowledge combination was just supported by IT support. Finally, there was a positive significant relation between knowledge creation and organizational creativity, which had a positive relation to organizational performance (OP).

Kalling (2003) has done a case study. The research objective was the impact of KM on organisational performance depends on various organisational level and firm level dependency. KM is divided into three processes – knowledge development, knowledge utilisation and knowledge capitalisation. Each process has its own contingency factors and performance outcomes.

Darroch (2005), empirically supported the view that an organisation with a knowledge management capability will use resources more efficiently and so will be more innovative and perform better. Daud & Yusoff (2010), based on an empirical survey, found that KM processes affects social capital positively and that social capital enhances organisational performance. The study showed that KM processes and social capital can be integrated to enhance organisational performance. Gold et al. (2001)

conducted an empirical survey and concluded that the knowledge infrastructure (KIC) and knowledge process capabilities (KPC) impact organisational effectiveness (OE).

Marques and Simón (2006) studied the impact of knowledge management practices on firm performance. This research was based on 222 questionnaires from the biotechnology and telecommunications industries. The knowledge management practices are measured by an orientation towards the development, knowledge transfer and knowledge protection, learning continuously in the organisation, considering organisation as an overall system, development of an innovative culture to encourage R&D projects, approaches based on individuals, and competence development and management based on competences. The results show that KM practices adoption in the firm can improve performance.

The influence of organisational learning culture on organisational knowledge creation practices in Korea is studied in a research by Song (2008). In this research, seven dimensions, set up by Marsick and Watkins (2003), were applied to define organisational learning culture. Furthermore, the knowledge conversion theory (Nonaka & Takeuchi, 1995) was used to measure knowledge creation practices. The results showed that considered structural model, in the Korean cultural context, is a valid concept and organisational learning culture factors are influential for the knowledge creation practices.

Choi et al. (2008) studied empirically the KM strategies on performance. In KM strategies, they focused on tacit-explicit and source, which come from internal-external of the organisation. In performance, they assessed financial performance based on the return on sales (ROS) and return on asset (ROA). This study found that complementary sets of KM strategies are linked to higher profits in the organisation. Choi et al. (2008) studied the KM by several indicators, including system-oriented, in which the whole system conducts KM in the organisation, human-oriented, which is a human based KM

application, and dynamic, which is either system or human oriented. This study focus with performance with several indicators such as overall success; market share; growth rate; profitability; innovativeness; business size. This study results show the KM strategy link to higher performance.

The study of Zack et al. (2009) examined the relation between knowledge management practices (KMP) and performance outcomes. The results showed that there was no direct relation between KMP and financial performance. In fact, the relation between KMP and financial performance was indirect and intermediated by organisational performance.

Shieh (2011) studied the customer knowledge management (CKM) of Taiwanese service businesses in China. Four hypotheses were studied in the research; the positive correlations between CKM and organisational performance, learning organisation and CKM, learning organisation and organisational performance and, finally, the impact of learning organisation on the correlation between CKM and organisational performance. The results showed that there is a positive correlation among considered variables. Besides, it asserts that improving organizational learning characteristics in an organisation can improve performance, and strengthen of the ability of implementing CKM.

Hsiao et al. (2011) tested the relationships between knowledge management capacity as independent variable, which was measured in terms of acquisition and dissemination, and organisational performance as dependent variables. The research was questionnaire-based and the sample was drawn from 5000 Taiwanese firms. The results showed that knowledge management capacity can be considered as an enabler of organizational performance. It also illustrated that knowledge management capacity and organisational performance are positively related.

The research also tested the positive relation between social interaction, in terms of communication and coordination, and organisational performance. It showed that social interaction has complementary effects, with knowledge management capacity, on organizational performance.

KCM consist of nine activities such as acquiring, selecting, generating, assimilating, emitting knowledge, control, coordination, leadership and measurement. These activities are studied in several researches with different combination design, in order to find out the relation between KMA concerned the previous studies to find out the effect of combination design effects of KMA in KCM.

Mills and Smith (2011) evaluated the impact of certain KM resources on OP. The KM resources, considered in the research, were knowledge infrastructure capability (KIC), consisted of technology infrastructure, organisational culture and organisational structure, and knowledge process capability (KPC), including knowledge acquisition, conversion, application and protection. The sample was drawn from respondents in management levels in firms. The results showed that knowledge resources, such as organizational structure, knowledge acquisition, application and protection were directly related to OP and the other resources, although being important for KM, were not related directly to OP. Such insights make firms able to target the investments and improve the success of KMA.

The study of Bhatti et al. (2011) tried to investigate the effect of PICS model on knowledge management, which affects organisational performance. The PICS model included processes , intellectual capital , culture and strategy , as variables. The results shows effective utilization of knowledge will not only create competitive advantage, but also maintains it as well, that would improve organizational performance.

Tubigi and Alshawi (2012) aim at investigating the impact of KM processes on OP. Through an extensive classification of KM processes, their proposed model,

explores the impact of each KM process on improving the level of OP. It is envisaged that this model can play a role in guiding the process of KM implementation in order to maximize the beneficial effects of KM processes on OP.

Table 2-1:

Literature review of the relation between KMA and OP

Author(s)	Model	Study Method	Finding
Gold et al. (2001)	KIC and KPC-OE	Empirical Study	Knowledge infrastructure capability (KIC), which is consisted of structure, technology and culture, and knowledge process capability (KPC), including conversion, acquisition, protection and application, are crucial capabilities for organizational effectiveness (OE).
Choi and Lee (2003)	KME-KCP-OC-OP	Empirical Study	The results show the impact of trust on knowledge creation. Knowledge combination is positively influenced by the information technology support. Performance is improved drastically by organizational creativity and a business can be undermined by neglecting ideas
Kalling (2003)	KM-FP	Empirical Study	The research indicates that the notion of KM can be separated out into three instances; development, capitalization and utilization, based on the assumption that knowledge is not always utilized, and that utilized knowledge does not always result in improved performance.
Chang and Ahn (2005)	KE-P	Empirical Study	The research considers the relation between knowledge entities, which is consists of product knowledge and process knowledge, and performance. It shows that although the relation between product knowledge factor and performance can be put in doubt, process knowledge factor is statistically significant to explain performance.
Darroch (2005)	KM-innovation and performance	Empirical Study	This research uses three scales to measure knowledge management, which is considered as a coordinating mechanism. These scales are knowledge dissemination, knowledge acquisition and responsiveness to knowledge. The results show that if knowledge management capability improves in a firm, resources would be used more efficiently and, therefore, the firm will be more innovative and will perform better.
Marqués and Simón (2006)	KMP-FP	Empirical Study	The research focuses on the relation between knowledge management practices (KMP) and firm performance (FP). The results demonstrate that there is a strong and positive relationship between the adoption of KMP and FP.
Choi et al. (2008)	KM Strategies-OP	Empirical Study	Utilizing the complementarity theory, this paper studies the relation between knowledge management strategies and OP. The results imply three types of relations among various KM strategies; non-complementarity, asymmetric complementarity and non-critical symmetric complementarity. It also suggests that companies, that implement external-oriented or internal-oriented strategy, might benefit from knowledge management.

Author(s)	Model	Study Method	Finding
Song (2008)	LOC-OKCP	Empirical Study	This research examines the relation between learning organization culture (LOC), which is measured in terms of seven dimensions, and organizational knowledge-creation practices (OKCP). The results show that LOC aspects can be considered as influential factors for OKCP.
Zack et al., (2009)	KMP-OP		The article studies the relation between knowledge management practices (KMP) and organizational outcomes. The results illustrate the existence of a direct relation between KM practices and organizational performance (OP) and direct relation between organizational performance and financial performance (FP). Therefore, although there is no direct relation between KMP and FP, KMP influences FP indirectly and through OP.
Daud et al. (2010)	KM Process-SC- FP	Empirical Study	The results demonstrated that KM processes influence social capital (SC) positively; SC enhances firm performance (FP); and SC is a mediator between KM processes and FP. The research demonstrated that KM processes and SC can be integrated to enhance FP.
Shieh (2011)	CKM-LO-OP	Empirical Study	This study shows that there is a positive correlation between costumer knowledge management (CKM), learning organization (LO) and organizational performance (OP). Besides, it illustrates that LO has an adjustment influence on the correlation between CKM and OP.
Mills and Smith, (2011)	KIC and KPC-OP	Empirical Study	The results of the research show that organizational structure, as one of knowledge infrastructure capability, and knowledge acquisition, application and protection, as knowledge process capabilities, have direct relationships with OP, while other knowledge resources (technology and knowledge conversion) do not have direct relation with OP.
Bhatti et al. (2011)	PICS-KM-OP	Conceptual Study	The study presents a conceptual framework model of PICS for effective implementation of KM. Based on the research effective knowledge utilization will not only result in competitive advantage, but it will also sustain it, which would enhance OP.
Hsiao (2011)	KMC-OP	Empirical Study	The research suggests that dissemination and knowledge acquisition, as two assessments of KM capacity, and social interaction, as a communication factor, have positive relations with OP. Further, social interaction has complementary or synergistic interaction effects with KMC on OP.
Tubigi and Alshawi, (2012)	KMP-OP	Conceptual Study	Through an extensive classification of Knowledge Management processes, the proposed model explores the impact of each knowledge management process on improving the level of organisational performance. It is envisaged that this model can play a role in guiding the process of knowledge management implementation in order to maximize the beneficial effects of knowledge management processes on organisational performance.

Source: Combined by Author

2.5. Competing Values

Competing values framework (CVF) is an empirically created framework for analysing change in competing values. Several researchers were evolved in the introduction of his framework and it is a combination of various dimensions. In 1974, a list of criteria for measuring organisational capabilities was presented by John Campbell and his colleagues (Mickelson & Campbell, 1975). Later, Quinn & Rohrbaugh (1981) developed a framework consisting of two dimensions used to delineate criteria into four clusters (see Figure 2-1).

The four quadrants of this framework are formed by two dimensions; the first dimension discriminates effectiveness from flexibility to stability, rules, procedures and policies, and the second dimension identifies the effectiveness of an organisation from inside to outside direction. Each tail of these dimensions forms the competing values. The core values of this framework are specified by the four clusters and can be adjusted and utilized in organisations. These values illustrate what people think as important about the performance of an organisation; therefore, they are considered as specific indicators of organisational effectiveness.

From one tail to another, the assumptions become thoroughly reverse. Therefore, these dimensions result in the competing quadrants on the crosswise. The name CVF is grounded in the contradicting values in each quadrant. These quadrants are intended to explain how different forms of culture in an organisation can be affected by various organisational values.

This framework, which demonstrates the organisational values, was designed and developed by Cameron and Quinn (1999) to study organisations. The four different competing values, formed by these dimensions and quadrants, specify the human behaviour in an organisation. Each quadrant illustrates the main prerequisites, orientations and values that are contained in competing values and specifies that is

called reliable and appropriate in an organisation. Quinn (1990) expounded that, although being opposite to each other, the four quadrants are related and complement one another. Besides, they are extremely notable since they represent the four ways of acquiring behaviours, values and moralities in organisations that individuals are imbued with.

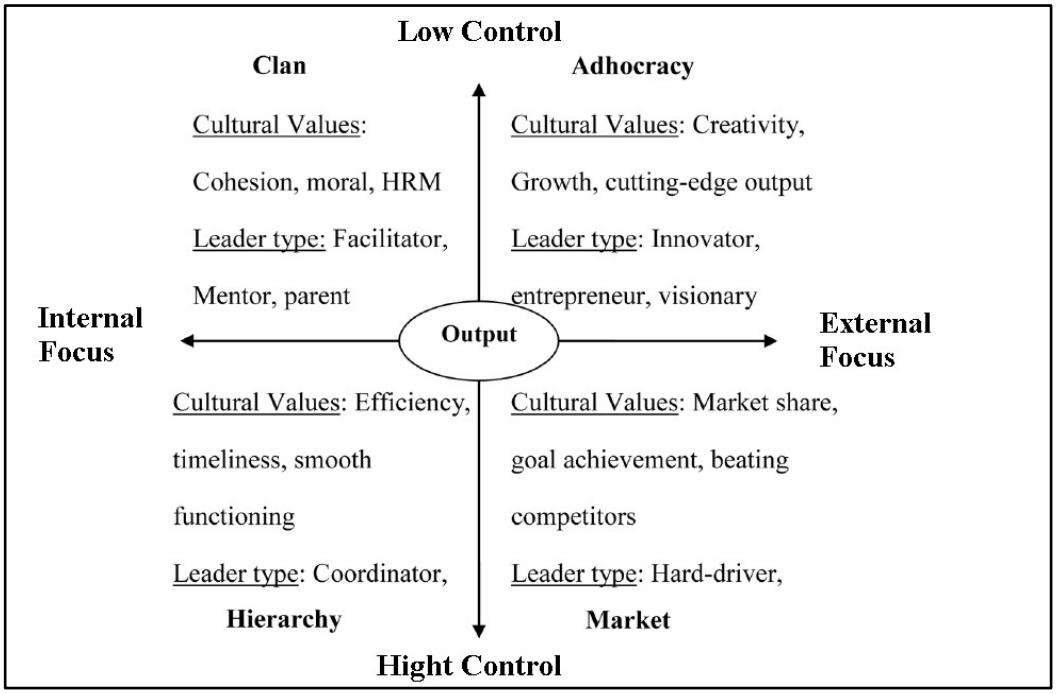

Figure 2-2 : Competing value model

Source: Cameron & Quinn, (1999)

Quinn and Rohrbaugh (1983) granted the four clusters, as equivalent to four categories of cultural values: human relation model (top left), open system model (top right), logical based form (bottom right), and interior side processing form (bottom left). These four characteristic forms are assembled in a model named ‘‘competing values framework.’’ Similar names, such as four competing value types, are adopted for this model (Cameron, 2007). Literary, in cultural studies, these four types of culture are referred to as clan, adhocracy, market and hierarchy (Harigopal, 2006). The real

attributes along with the implications that are connected with the community mode are explained in the following.

2.5.1. Clan

The clan value, illustrated in the up-left corner of the quadrant, depicts the aspect of human relationships and is perceived as values, beliefs and creeds, highlighted internally in an organisation. In clan value, which is sometimes called clan culture, the main stress is on sharing information among employees, team workers, and teamwork coordination. Additionally, clan value tries to highlight interpersonal human relationships, and participative decision-making processes (Cameron & Freeman, 1991). Employees become generally part of a common social system, and bonded collectively with colleagues, Cameron et al. (2003). Based on Wilkins and Ouchi (1983), supportive activities, such as secure membership and relatively long history, will strengthen the clan value of the organisation. In this kind of value, an organisation is considered as a safe and personal place to work and employees think of their workplace as home. The working environment is an auspicious surrounding that facilitates sharing personal experiences.

Top managers, in the clan value, are regarded as mentors of an organisation, because they lead the employees. The cohesiveness of the organisation comes with loyalty and tradition. Therefore, the commitment of the employees in the organisation is rather high. In this kind of value, the organisation has a long-term viewpoint by concentrating on the morality, consensus, teamwork and human resource development. In addition, group tendency is to share experience and information between employees of the organisation. Facilitator team builders and mentors are the best forms of leadership in this type of culture.

2.5.2. Hierarchy

The hierarchy or bureaucracy value (bottom-left) is identified as the interior process vision. In fact, it is specified by the values that emphasise on control, internal concentration or inner notice (Cameron & Quinn, 2003). The atmosphere in the organisations, where this kind of value rule, makes people precede their tasks based on routine schedules and constructed work process. Therefore, management unifies employees through control, rules, guidelines and methods. Clear framework and procedures, standard guidelines, strict rules, peculiar duties and responsibilities are characteristics of an organisation with this dominant value (Wu & Lee, 2007).

Having definite duties and responsibilities, the relation between employees is based on formality. Consequently, they do not find the organisation an adequate place to share their experiences; they merely follow the rules and policies of the organisation strictly and do not have the chance to share their experience and successes to improve the level of knowledge in the organisation. (Herzog & Leker, 2010). Strict bureaucratic rules and procedures makes people try to preserve the organisation present status and do not strive for higher achievements via innovation or creativity. This type of competing value tries effective performance via long-term concerns, smooth operations, scheduling and low-costs. In this value leaders play the role of organisers, monitors and coordinators (Bass, 1999).

2.5.3. Adhocracy

Adhocracy value (up-right quadrant), which is also known as an open system, emphasises the external environment such as natural and organic emphasis, with flexibility (Cameron & Freeman, 1991). The special focus in this kind of value is on preparing condition for innovation, creation, transformation, change, entrepreneurship, and in addition, acquisition from the outsider’s resource (Cameron & Freeman, 1991). On adhocracy value, strong relations generally take shape among employees and this

encourages innovation and creativity from being actuated, enthused and challenged (Cameron & Quinn, 1999).

Adhocracy value is like a temporary institution. In organisations with this value, after completing a specific project, groups that are involved in the project dissolve and re-emerge quickly when there is a new project to be tackled. The working environment in adhocracy value is dynamic, entrepreneurial, and creative. The employees contribute to the growth of the organisation by enhancing creativity, exploring and making new resources via taking risks that is the first priority of the organisation. Therefore, experimentation and innovation are the common point of this organisation.

The role of leaders, due to the long-term growth and new resources' acquisition, is inevitable. The best leaders in organisations with adhocracy value would be innovators and entrepreneurs, who try to use capabilities such as innovative outputs, transformation, and agility for overall organisational development (Beairsto, 1997). Therefore, the leaders are chosen from absorbed innovators and risk takers to achieve organisational goals (Ekvall, 1996).

2.5.4. Market

The market value (low-right part), also known as the goal seeker, is an identified competitors value, which is highly competitive and more implicated with external factors (Hamilton & Biggart, 1988). This value emphasis on competitiveness, conclusiveness with quick responses and productive manner through breaking barriers and goal achievement (Abolafia, 1990). Competing in the market is a crucial firm objective and goal by employees (Cameron & Quinn, 1999). Therefore, this value not only focuses on internal management, but also it particularly focuses on business, the way of communication, and dealing with the natural environment for business (Wilkins & Ouchi, 1983). Organisations try to make money via market competition and the

market value mainly tries to raise market share, goal attainment, and profitability. Leaders in this type of values try to promote market compactions.

2.6. Competing Values and Management Activities

There are several studies on the role of culture in knowledge management. These studies have focused on issues such as: effect of OC on knowledge creation, sharing and used behaviours (David et al., 2000) and influence of culture on the capabilities provithe influence (Gold et al., 2001). Constructive cultures, which emphases values related to encouragement, affiliation, achievement, and self-actualization have been found to result in greater KM success (Balthazard & Cooke, 2004). Although the effect of culture on KM activities is studied by different authors, some researchers focused on CV, which is more precise than culture, and studied its relationship with knowledge management activities. This study investigates the relation between CV and KCM and KCM, which combines different activities of KM practices.

David et al. (2000), in their study, focused on the relation between culture and some KM activities and identified four comprehensive ways in which to knowledge creation, sharing, and use can be influenced by culture. These ways include (1) assumptions about what knowledge is and which knowledge is worth managing to be shaped by culture, (2) relationships between individual and organisational knowledge is defined by culture, (3) the context for social interaction, which defines knowledge is used in particular situations and is created by culture and finally, (4) the processes, which create, legitimate and distribute new knowledge in organisations, is shaped by culture. These perspectives imply actions that can be taken by managers to evaluate the aspects of culture which are influential to knowledge-related behaviours.

Lawson (2003) examines the relationship between CV and six dimensions of knowledge management. These dimensions are knowledge creation, capture, organisation, storage, dissemination and application. The research indicates that there is

a positive correlation between CV and KM. In more details, Hierarchy culture supports the six KM dimension negatively. While the Market culture was found to support KM positively, the results do not provide enough evidence about the relation between clan and adhocracy values with KM.

To study the effect of culture on KM success, Balthazard and Cooke (2004), applied the Organisational Culture Inventory (OCI) instrument. Their study suggests that constructive type values (achievement, self-actualization and affiliation) positively impact organisational factors, such as role clarity, communication quality, organisational fit, behavioural conformity and job satisfaction, which promote KM success. This research suggested that managers can conduct cultural assessments of different organisational subgroups before undertaking KM initiatives. Such assessments can help managers detect possible implementation problems for KM projects and to design the appropriate organisational interventions.

Alavi et al. (2006) studied how organisational culture values (formalization, innovativeness, collaboration and autonomy) influence knowledge management. It is found that organisational culture shows a more complicated relation to knowledge management, compared with previous studies. Culture has an impact on employees' knowledge sharing and seeking and the firm' selected type of technology. It also extends the firm’s performance in the information age.

According to Al-Alawi et al. (2007), the organisational culture, measured by trust, communication between staff, information systems, reward system and organisational structure influences the success of knowledge sharing. More precisely, factors such as trust among co-workers, communication between staff, the existence of the reward system and participative decision-making have been shown to positively impact knowledge sharing.

The study of Omerzel et al. (2011) focuses on the correlations between organisational culture and knowledge management dimensions at the university level, and four processes were proposed and used as knowledge management model. These processes include knowledge generation, storage, transfer, and application. The research focused on the teaching staff of the faculties, and selected 2 public faculties from the area of social sciences, using two criteria. The first criterion applied was the number of enrolled students, and the second was the level of the implementation of Information and Communication Technology. In the first criteria, Omerzel et al. did identify that market culture is significantly correlated with knowledge storage, knowledge transfer and knowledge application. Besides, the relation between clan culture and knowledge transfer and knowledge application is significant. However, the analysis of the second criteria demonstrated that none of the types of organisational culture are in a statistically significant correlation with any of the knowledge management processes.

The research conducted by Suppiah and Sandhu (2011) focused on the influence of organisational culture (OC) on tacit knowledge sharing behaviour (TKSB) in Malaysian organisations. In this research, TKSB is evidenced by organisational communications, personal interactions, mentoring/tutoring, and willingness to share knowledge freely. The data were collected from public and private organisations and the search findings show that adhocracy has no influence on TKSB. Besides, clan has a positive influence and market and hierarchy have negative influence on TKSB.

Sanz-Valle et al. (2011) analysed the effect of organisational learning (OL) on technical innovation (TI) and the role of organisational culture as a determinant of the organisational learning processes. Spanish industries, except agriculture, were covered in this study. The research findings showed that adhocracy culture is positively and hierarchy culture is negatively associated to organisational learning. Besides, the impact of clan and market cultures on organisational learning is not supported by the findings.

Based on this research, clan and market culture have no significant relation with technical innovation. Moreover, findings indicate that adhocracy and hierarchy cultures affect technical innovation indirectly and organisational learning plays the role of mediator in this case.

Liao et al. (2012) investigated the relationships among organizational culture (bureaucratic, innovative and supportive cultures), knowledge acquisition (internal creation and external acquisition), organizational learning (commitment to learning, shared vision and open-mindedness), and organizational innovation (product, market, behavioural and strategic innovation) in Taiwan's banking and insurance industries. The data were collected from 23 financial enterprises. Considering the definitions presented in their research, the bureaucratic, innovative and supportive cultures are equivalent to hierarchy, adhocracy and clan cultures. Based on their research, bureaucratic culture (hierarchy) has a negative effect on knowledge acquisition, organizational learning and organizational innovation. Besides, their research shows that there is a positive significant relationship between adhocracy and clan cultures and knowledge acquisition, organizational learning and organizational innovation.

Table 2-2:

Literature typology of relationship between culture and KMA

Author(s)	Model	Study Method	Findings
DeLong and Fahey, (2000)	Culture-Knowledge Creation, Sharing and Use	Non-Empirical-Conceptual	They assert that culture shapes assumptions, relationships, processes and context for social interaction. These four perspectives indicate actions that can be taken by managers to assess the various aspects of culture to have an impact on knowledge-related behaviours.
Lawson (2003)	OC- KM	Empirical Study	The results indicate that there is a significant relation between competing value constructs and considered knowledge management processes.
Baltahazard and Cooke (2004)	OCI- KM Success	Empirical Study	The paper displayed a framework representing the relation between culture (conservative and defensive) and outcomes which are consistent with successful KM environments. The results show that the inventory is a powerful indicator of outcomes, which are related to both individual and organisational outcomes.
Alavi, et al. (2006)	OC- KM	Empirical Study	The paper studied the effect of organisational culture on knowledge management practices. The results point out that culture influences the way an organization uses KM technologies and the outcomes of such use.
Al-Alawi et al. (2007)	OC-Knowledge Sharing	Empirical Study	The research results showed that knowledge sharing is positively influenced by trust, communication, information systems, rewards and organisational structure.
Omerzel et al. (2011)	OC- KMP	Empirical Study	The results indicate significant relationships between some competing values and considered knowledge management processes.
Suppiah et al. (2011)	OC- TKBS	Empirical Study	The results of the study demonstrated statistically significant relation between competing value constructs and tacit knowledge sharing behaviour.
Sanz-Vallle et al. (2011)	OC- OL- TI	Empirical Study	The study focused on the effect of competing values on organizational learning and technical innovation. The study shows that some competing values are significantly correlated to the considered dependent variables and organizational learning may also plays the role of mediating variable in the research.
Liao et al. (2012)	OC- KA- OL-OI	Empirical Study	This study considers the relations between organisational culture with knowledge acquisition, organisational learning and organizational innovation. The results demonstrate the existence of a statistically significant relation between considered.

Source: Combined by Author

2.7. Competing Values and Organisational Performance

Organisational culture is a broad concept of view and, in KM literature; there are some investigations about the relation between OC and OP. In order to support conceptual framework support, this research reviews some relevant studies.

Ogbonna and Harris (2000) studied the relationship between leadership style, OC and OP. Competitive, innovative, community and bureaucratic culture are considered as OC constructs and the leadership style is studied through supportive, participative and instrumental leadership. Although it is generally believed that organisational performance is directly influenced by organisational culture (Denison (1990)) and that changes to cultural have an immediate influence on the effectiveness and efficiency (Heskett and Kotter (1992)), the results indicate that two forms of culture (bureaucratic and community) are not directly related to performance. Moreover, the results indicate direct, strong, and positive associations between competitive and innovative culture and organisational performance.

The study conducted by Lee and Yu (2004) considers the effect of a number of organisational culture profile (OCP) factors, i.e., innovation, supportive, team, humanistic and task orientations, on assessing the organisational performance (OP). The study enhances the understanding of the culture construct in the Singaporean context. The objectives of the study are investigating the validity of the culture construct and assessing the effect of culture on organizational performance. The results indicate that culture impact various organizational processes and performance. Besides, this study has demonstrated the power of culture in influencing organizational performance.

Henri (2006) studied the effect of the control/flexibility pair of competing values (CV) on the use of performance measurement system (PMS) and the diversity of measurement (DM). His model also indicates that PMS can be used as a mediating variable on the relationship between control/flexibility values and the diversity of

measurement. In the research, PMS was measured by monitoring, focusing attention and legitimizing decisions. The results indicate that, depending on the nature and intensity of use of PMS, the diversity of measurement will vary. It also shows that, in firms with flexibility dominant culture type, top managers tend to use more performance measures and to use PMS to focus on organisational attention, support strategic decision-making and legitimate actions to a greater extent than top managers of firms with control dominant culture type.

Dobni (2008) investigated the relationship between innovation culture (IC), based on intention, infrastructure, market orientation (influence) and implementation context for innovation, on Performance outcomes (PO). Based on the study, the role of innovation is becoming increasingly more important in organisations, and if successfully implemented, an innovation culture will provide a competitive advantage, and may eventually result in industry leading performance.

Finally, Zhang and Zhao (2012) looked at the relationship between organisational culture and OP. They divided organisational performance into financial performance and market performance and they measure the financial performance by three dimensions, sales, ratio of sales and return on investment. Besides, the market performance was measured by three dimensions which are customer satisfaction, market share and customer retention rate. Questionnaire describes the organisational culture from six aspects: characteristics of leadership, leadership style, features of employee management cohesive source, strategic emphasis and criterion of success. Each side has four description and represented clan, hierarchy, adhocracy and market cultures. By regression analysis, it can be found that four organisational culture types have an impact on organisational performance. The research results showed that if an enterprise's organisational culture type tends toward adhocracy or market value, the higher the organisational performance is and if an enterprise's organisational culture type has more

tendencies toward the clan or hierarchy value, the lower the organisational performance is. Besides, adhocracy and market had greater impact on organizational performance.

Table 2-3:

Literature typology of the relationship between OC and OP

Author(s)	Model	Study Method	Finding
Ogbonna and Harris (2000)	L-OC-OP	Empirical study	The results show that the organizational culture mediates the relation between leadership style and organizational.
Lee and Yu (2004)	OCP-OP	Empirical study	The research results confirm the effect of culture on a variety of organizational processes and performance. It also indicates the power of culture in influencing organizational performance.
Henri (2006)	CV-PMS-DM	Empirical study	The results of the survey reveal that top managers of firms, reflecting a flexibility dominant type, tend to use more performance measures and to use PMS to focus organizational attention, support strategic decision-making and legitimate actions to a greater extent than top managers of firms reflecting a control dominant type.
Dobni (2008)	IC-PO	Empirical study	The results suggested that an innovation orientation has an impact on organisational performance and there was a positive relation between return on investment and innovation orientation. Significant negative correlations were identified with return on investment, overall firm performance and the overall enterprise value.
Zhang and Zhao (2012)	OC-OP	Empirical study	The results indicate the effect of different culture types (or competing values) on organizational performance.

Source: Combined by Author

2.8. Organisational Performance

Organisational performance is one of the most commonly used variables in the management and business research. However, there is still an ambiguity, vagueness and blur specified construct for this variable (Harris & Katz, 1989; Rogers & Wright, 1998). Some studies emphasis that performance mostly deals with financial measures, while others define performance in comparison with the created values by the organisation and the owners expected values (Venkatraman & Ramanujam, 1986).

Salem et al. (2002) indicated, performance is going through routine duties, tasks and works that results return to the organisation. Porter (1998) expounded performance in the organisation, as a result of normal works or more precisely, of a specific action. The key reason for the porter's definition is the linkage of performance to some components like organisational plans, customer satisfaction and economy

Performance may also be described as the capacity to fulfil the planned results. Thereby, organisational performance is measured by comparing the organisational output or the gains with the intended results such as organisational objectives. Based on Suk et al. (2005), organisational performance is concerned with the fact that to what extend the organisation achieves market targets and financial goals. Thereupon, organisational performance may be measured by the consequences of all the activities which taking place in the firms.

However, some authors have a different notion and think of performance as a relative concept like (Carin & Good, 2004). This point of view results in measuring performance against some baseline or benchmark standards. The measuring organisational performance is not a superficial assignment because it has a deep effect on the people's behaviour in the organisation, such as employers and employees.

Considerable improvements in the organisational performance are the main concern of any business and applying knowledge management has significant consequences (Burke & Litwin, 1992). The majority of managers try to measure organisational performance by applying financial measures which include return on investment (ROI) or return on sales (ROS) (Chakravarthy, 1986). These measures should be appropriate in particular circumstances for instance, in steady and stable environments of the firm (Orlitzky et al., 2003).

The knowledge chain model in this study, measuring organisational performance with, financial and nonfinancial measures together (Bierly & Chakrabarti, 1996). In the

early the 1990s, performance measurement was considered as an important issue for academics and practitioners. The professionals' suggestion for designing new performance measurement systems lead to systems that include financial and non-financial measures.

Nonfinancial performance measures, such as customer satisfaction, on time delivery, employee satisfaction, competence, etc., are viewed as essential tools for gaining competitive advantage with the rise of stern competition in today's technology-driven and international industrial economy. The academics and practitioners urge an increasing insistence on better customer service, superior workforce, and excellence in manufacturing operations. As a result, the adoption of measures to capture these qualitative dimensions, commonly known as non-financial measures in the academic circle, has become a necessity for firms trying to succeed in a fiercely competitive market (see for example, Kaplan and Norton, 1992; Horngren et al., 2009).

In order to overcome the shortcomings of the traditional financial performance measures and to devise a measurement system incorporating all dimensions of the value chains of a business, academics and practitioners endeavoured to use a comprehensive performance measurement system. The rationale for the adoption of a single comprehensive performance measurement system is that multiple performance measures are assumed to offer continuous indications to key decision makers with regard to what is most indispensable for the day-to-day operations and where efforts must be headed for. This rationale is endorsed by scholars pursuing research in performance measurement systems (see for example Hoque and James (2000); Ittner and Larcker (1998); (Otley, 1999)).

The use of multiple performance measures has many benefits. The inventors of the Balanced Scorecard (BSC) model, Kaplan and Norton (1992; 1996), posited that the use of multiple performance measurement system promotes balance between outcome

measures (the results of past efforts) and the measures that will drive future performance. However, earlier studies (Govindarajan & Gupta, 2001; Ittner & Larcker, 1998; Simons, 1987) reveal the role of the contextual variables, which might have influences on the use and effectiveness of performance evaluation systems in organisations.

Previous research attempts, such as Hoque (2004); Hoque and James (2000), documented how the different contextual variables such as firm size, strategic priority, and market competition, computerized manufacturing system, etc., influence the use of multiple performance measures or adoption of BSC in different international settings.

In this thesis, performance was measured based on 10 items. These dimensions, which are developed by Govindarajan and Gupta (1985), include market share in the primary market, return on investment (ROI), growth of market share, sales volume, on time delivery, cash flow, new product introduction, customer satisfaction, productivity of labour force and cost reduction. To shorten the required time to complete the questionnaires, the measures were presented as a 5-point scale. Low performance is indicated by low score, and high performance is indicated by high score.

2.9. Underlying Theories of Study

This section provides an overview of three theories, which underpin this study. These theories include resource-based, contingency and organisational theories. These theoretical viewpoints form the basis for the examination of competing values, knowledge chain model and organisational performance.

2.9.1. Resource-Based Theory

The basic supportive theory in a knowledge management practice study is the resource-based theory, which is developed from the resource-base point of view.

Therefore, before going through the resource-based theory, it is necessary to explain the resource-based view (RBV).

The RBV discusses resources and capabilities, e.g. intangible resources, which enable firms to achieve competitive advantages, such as knowledge enhancement or learning through activities, and lead them to superior long-term performance (Denisi et al., 2003). For example, in Iranian service firms, the concentration is on service products and intangible production, and, consequently, knowledge processing and activities would be more vital for competing in the vulnerable market. The service firm products are intangible productions that may just be for single minutes and, after an operation is completed, the new service and process would be started for the next customer.

RBV in the firm is known as a strategic asset, which is rare, valuable, inimitable and irreplaceable (Peteraf, 1993). Resources, such as knowledge, are valuable, rare and of leading role in creating competitive advantages. The competitive advantage would not be gained unless the organisational and management activities are enhanced through strategic assets like knowledge in the firms.

It is generally accepted that sustainable competitive advantage in modern business will be achieved through knowledge management practices (KMP) and the significance of knowledge for efficiency and competitiveness in large organisations become progressively clearer. The primary reason of applying KMP is the notion that knowledge and its application can promote creativity (Nonaka & Takeuchi, 1995), facilitate innovation and pull competencies in such a way that promote organisational performance in the industrial, service and nonprofit sector (Pitt & Clarke, 1999).

Although ‘Knowledge Management’ term is applied in a very broad range of viewpoints and designed model to manage, create, exchange and enhance intangible assets, like knowledge inside the organisation, there is a lack of agreement on what KM

actually is (Knox & Kingston, 2003). Therefore, KM can be demonstrated as an intersection of ideas and claims during the last decade, including core competencies and resource-based theories of the firm, 'balanced scorecard' and intangible/intellectual assets, the learning organisation and 'communities of practice', the networked organisation and the 'boundary less firm' (Corrall, 1998).

In this research the relevant model shows harmonization between organisational activities and management as a chain and the effects of knowledge chain activities on performance of the firm. These activities are not just single activities in separate operation; they are value added and accumulation in which each group of activities supports the other one in the whole organisation. The advantage of each group of activities can be sustained competitive advantage for a long time. This would be possible if the firm is able to protect against resource imitation, transfer, or substitution by knowledge chain activities.

In general, the resource-based view have been strongly supported with empirical evidence (Wernerfelt, 1984). As mentioned in Grant (1991); Wernerfelt (1984), the main key point of the RBV is that the foundation or basis of a firm's strategy is the firm's resources. The strategic view point in knowledge chain model is arranging the management and organisational activities for competitive advantage, reputation and firm performance.

In a firm, RBV looks at the organisation as a bundle or a package of the resources, such as knowledge, which made the assets discovered, recognised, selected, explained and adapted to create superior performance (Huygens et al., 2001). In this thesis, knowledge chain activities are assigned in the firm to support and enhance the knowledge management activities and process in the organisation. Thus, knowledge leadership motivates and promotes the coordination, control and measurement. Overall,

this supports organisational activities including knowledge acquisition, selection, generation, assimilation and emission activities.

Management activities declare top authority which can facilitate, promote and initiate the organisational activities. Therefore, a firm has to concentrate on knowledge activities of the organisation and adapt to better business strategies. Lack of balance, equation, harmonization and fit between management and organisational activities of knowledge chain would result in low individual and organisational performances. Therefore, the knowledge resources of the firm should be carried organisational strategies. In knowledge chain model, knowledge exists as an intangible asset that leads to better performance in the organisation.

Another factor is the firm capability in adapting the available knowledge resources for better organisational performance (Peteraf, 1993). The RBV not only highlights and develops a firm's resource; but also it develops the firm's resource-base. Constant resource development in the field of knowledge refers to using the accumulated impact of knowledge in various layers of the organisation.

Each organisation has three layers, individual, group and organisational layers. Obviously, in individual layers, the circulation of knowledge is among employees, while, in group layers, knowledge circulates and manipulates among individuals and groups, concurrently. In the knowledge chain model, the main concern is the organisation as a whole and the main attempt is coherence organisational layers in a way that results in competitive advantage and high performance. The resource-based view theory supports the model, in which constant knowledge activities develop by supporting each activity in a chain-like manner. This action leads to constant knowledge enhancement circles in the firms.

Therefore, the firm's knowledge resources development is necessary for competitive advantage preservation and customer satisfaction requirements (Grant, 1996).

Competitive advantage is defined as a unique way of the firm's ability to apply intangible resources in a business environment. Based on Grant (2002), transferability, transparency, durability and applicability are four feature of resources that results in sustained competitive advantages.

Another aspect of RBV is competency, which an elaborate organisational feature. Core competency, which is hard to substitute or imitate, is the result of organisational learning (Raub & Sanchez, 2001). The core competencies can be clarified considering metaphor of a tree (Prahalad & Ramaswamy (2000)). They liken core competency in an organisation to the roots of a tree; although being invisible, tree roots strengthens the tree and similarly, although being invisible, core competencies are the roots of an organisation and have inevitable impacts on organisational life cycle.

In knowledge chain model, activities, such as emission, assimilation and generation, leads to knowledge enhancement, which in turn can produce, core competencies in organisations. The RBV of a firm illustrates that resources are collected to enhance the organisational capabilities, which leads to a competitive advantage (Grant, 1996).

RBV is the basis of resource based theory (RBT), as will be mentioned in the following paragraphs. The main purpose of applying the resource-based theory in the firms is that it clarifies the reasons why firms can obtain and sustain the competitive advantage (Amit & Schoemaker, 1993). It is asserted that the performance of a firm is the main result of a unique set of resources that are rare, valuable, irreplaceable, and has not been reproduced readily (Barney & Zajac, 1994). A primary assumption of this theory is the heterogeneity of the distribution of the resources required to conceive, choose, and implement strategies across firms. This is the reason of differences in the firm's performance (Schulze, 1994). Proponents of RBT broadly define resources, including physical assets, financial capital, brand image, knowledge, information technology (IT), organisational processes, etc (Bharadwaj, 2000).

Based on RBT, Knowledge is one of the fundamental sources of competitive advantage and has the capability to clarify the changes in the performance of firms. In this case, knowledge capability is imputed in knowledge processes, knowledge activities in the organisational (Conner & Prahalad, 1996). Knowledge is able to proceed in the organisation by people and computer base systems. While knowledge practices perform by employees' knowledge activities with clear patterns of KA in KCM in obtaining KM goals (Holsapple & Jones, 2004).

Although, organisational knowledge is classified as various classes, Shum (1997) affirmed that the most strategic classes of knowledge in a firm belong to customers, products and managerial knowledge, which believed these knowledge complement each other (Landry et al., 2006). In the service marketing and advertising skills, customer knowledge refers to the knowledge about customer preferences, needs, buying behaviours, and knowledge of the firm's markets for better overall organisational performance (Scardamalia et al., 1989). Knowledge is the source of development activities in new goods and services (Markides & Williamson, 1994). Management knowledge activities refer to the knowledge required for governing the business units in the firms and among competitors (Hamel, 1989).

Based on the foregoing, KMA is a significant resource in the firms since it gives the better leverage of knowledge resources use by efficient processors. For instance, OA of knowledge chain improve knowledge processes by generation, acquisition, selection, assimilation, and emission of knowledge (Holsapple & Joshi, 2004). For instance, knowledge generation is discovering, detecting and finding knowledge in the existing knowledge context, when knowledge acquisition illustrate the knowledge acquiring activities from the external environment for appropriate and suitable use. Knowledge selection refers to selecting required knowledge from internal environment of the firms for suitable use, whereas knowledge assimilation alters the state of knowledge by

filtering, refining, integrating, synthesising, and distributing. Finally, knowledge emission is the embedding knowledge into goods or service design and production for external environment (Wiig & Jooste, 2004).

2.9.2. Contingency Theory

To show how contingency theory supports research framework and hypothesis, first, the contingency theory should be clarified. This section is devoted to different aspects of contingency theory, its prerequisites, and the way it supports the frameworks as adopted in this thesis. Contingency theory is generated by systems design. Luthans (1973) stated that the contingency theory came with the contingency, which means that, there is no best way to organise, as far as the organisation has been influenced by internal and external factors and there is no best way to manage the input and outputs.

There are four competing values in the organisation and each highlighted and emboldened in knowledge management activities. In competing values, different units within an organisation may confront different external or internal demands. The need to strategise and cope with internal or external tendency of the organisation from one side and more control or stability and flexibility or less control dimension on the other side lead to the four quadrants in the organisation. It needs specific knowledge management activities for initiation of the chain activities, such as different levels of assimilation vs. emission, selection or generation.

As much as the control becomes lesser and the communication becomes facilitated in the organisation, the people have more space for transferring their knowledge and increase the knowledge activities such as assimilation and emission. On the other hand, when the organisation has a formal structure and highly follows the hierarchical communication, there is no room for fast communication for management activities and organisational activities. Based on the contingency perspective which stems from the competing value model, stable environments need specific identification. This could be

in the form of mechanistic structures, which in turn, point to centralization, formalization, standardization, and specialization and more control to achieve efficiency and performance.

Uncertain environment needs flexibility and discretion to respond to the organisation's environment. Certainty and uncertainty are two tails of the axe, showed in Cameron and Quinn's competing value model (Findling et al., 2006). The two dimensions of CVF express the extent of competing values tend to internal/external or stable and flexibility tendency of the organisation. Internal/ external tendency means that organisation is more relay on internal or external resources. Stability tendency is shown in rules, policies and procedures in the organisation. Stability or more control tendency forms particular values in the firms. However, flexible tendency, which leads to organic structures emphasizing decentralization and adaptability. These two dimensions contribute to general methods of adaptability for dynamic environments.

Lawrence and Lorsch (2006) suggested that competing values in contingency is formed by control and internal-external perspective, as the two considered dimensions. In changing environments, various internal unit characteristics would be developed by the competing values, and need for coordination between unites will increase as the internal differences become greater.

Behavioural theory is classified by contingency theory and it suggests that there is no best way to lead an organisation or make decisions in different cases. Besides, the best action depends on the internal and external tendency of the firm. In the late 1960s, different contingency approaches developed simultaneously (Luthans, 1973).

Each organisation has its structure, which is influenced by external or internal factors. Therefore, contingency theory could be used to decide about the best approach to be adopted for knowledge management activities. Generally, two different approaches are adopted in the organisations; mechanistic and generative. There are

some contexts, which consider a mechanistic approach to knowledge integration more effective, while others think of a generative approach as more beneficial. For example, when a new practice or product is applied or when a new IT system substitutes the existing system, mechanistic sharing will be the most efficient.

Mechanistic approach is more useful for interaction between professionals and functional team members based on hierarchal levels in new product development. Meanwhile, knowledge generation in mechanistic approach is requested if the new product development depends on professional groups worked together (Cook & Brown, 1999).

KMP is a multi-dependent discipline which integrates business process and strategy. This is concerned with long-term activities for enhancing the organisational knowledge, organisational community and culture. It could enhance and enforce the management activities of knowledge chain, organisational activities of knowledge chain, collaboration, learning, expertise, and technology (Silver, 2000).

2.9.3. Organisational Theory

The knowledge chain activities are a discipline that tries to improve the performance competitions and organisational proficiency by maintaining the present and future value of knowledge assets (Wiig et al., 1997). The values emanate from organisational goals and strategies, which improve the organisational values, based on management and organisational knowledge activities. Knowledge chain activities cover human and automated activities. From this perspective, knowledge activities are not new practices, as they are regarded as integrating practices. Therefore, it offers a framework for balancing various approaches that provide values, tie them together to form a seamless pattern. It also helps designers and analysts to designate interrelated knowledge flows more accurately and enable individuals, organisations and systems to exhibit truly intelligent behaviour in multiple contexts (Newman & Conrad, 2000).

The fundamental difference between individuals and organisations' knowledge chain activities is that organisational knowledge and decision-making involve collecting memories and activities of the majority of individuals, separated by time and space. It also transcends organisational properties, routines, systems and knowledge that persist independently from any individuals' memory or activities. Organisational theory (sometimes known as 'theory of the firm') helps in understanding the differences and relationships between individuals and organisations in knowledge management. Organisational theory also helps to extrapolate properties and responses of firms when challenged by new technological aids, such as aids to superior management of organisational knowledge (Bennet & Bennet, 2004).

2.10. Theoretical Framework and Hypothesis

As mentioned previously, the considered dimensions in this research are competing value (Cameron and Quinn (1999)), which retains its dimensions with internal-external tendency and the extent of control effect, knowledge chain activities, with management and organisational activities of knowledge chain and organisational performance. This study empirically investigates the effect of competing values on the knowledge chain model and organisational performance.

This section is divided into two main sub-sections. The first part is devoted to the conceptualisation of the theoretical framework within the resource-based theory and contingency theory of the firm, and the focus of the second part is on the development of research hypotheses for the considered relationships in this study.

2.10.1. Theoretical Framework

Based on the literature, sound reasoning, in the context of deductive approach, deals with the development of a framework for the research. The theoretical framework, shown in Figure 2-3, is underpinned by resource-based view (RBV) and contingency

theory, and relates competing values, knowledge chain model and organisational performance.

RBV proposes that intellectual resources are the key organisational assets with the capability of sustaining competitive advantage (Oliver, 1997). The firms need to effectively lead knowledge resources to harvest a wide range of benefits in the form of customer services development, cost reduction, efficient decision-making, efficient problem solving, rapid development of new product lines (Hoopes et al., 2003).

The proposed model of this thesis studies competing value which depends on the low control (flexibility) and high control (stability) on one dimension, and internal and external position on the other dimension. The organisation determines the best approach based on the current situation. The CVF, produced by Cameron and Quinn (1999), may lead to specific values in the organisation in each situation. Based on the previous studies, there are links between organisational cultures that support KCA, which play important roles in KM. In this case, there is no best value for any organisation to support knowledge chain activities; therefore the contingency theory would come in handy for the proposed framework.

There are a variety of changes in an organisation to identify the knowledge management success. One of the most difficult challenges is organisational value, which comes from organisational structure and tendencies. The framework of this research concentrates on CVF and KCM. Based on several researchers, the structure of the organisation and the extent of the control can directly affect knowledge management activities, such as acquisition, selection, generation, emission and assimilation. According to Prasarnphanich (2008), "Competing value is believed to be the most significant input to effective KMA, which determines values, beliefs, and work systems that could encourage or obstruct".

Few studies have investigated systematically the types of organisational cultural values and their association with certain types of KM activities, technology choices and related outcomes. To fill in this gap, this thesis explores the effect of organisational values on KMA, and its possible outcomes.

Some researchers have specified culture in terms of ideologies, basic presumption, faith sets, common perceives, shared core values, and collective intents (Pierce, 2004), however, competing values lies at the centre of this framework. Some other researchers indicate that culture covers more explicit outcomes such as norms of behaviours, holy symbols, as well as languages, costumes, and ceremonies (Kaasa & Vadi, 2010). Although, this concept issues ways to develop social group behaviours, it may lead to confusion and fallacy in competing value research, due to the range of conceptualisations of culture (Harris, 1998). To implement this concept without surrendering its richness, this study draws the four-dimensional model that represents values in terms of basic assumptions, clan, market, adhocracy and hierarchy, Cameron and Quinn's (1990). This study intends to test the impacts of each construct on knowledge chain activities, which are classified as primary or organisational and secondary or management activities.

In order to study the relationship between competing values and knowledge chain activities, some research investigated organisational culture and KMA. In the Cameron and Quinn model, values attests through organisational specification such as the extent of flexibility and the extent of internal and external intentions. These components make four quadrants, which produces organisational values (Cameron, 2007).

As it is mentioned earlier, a clan value stresses on employees' participation, commitment and team working as the typical characteristics. Clan value is more like a family-base organisation what employees spur; rehearse shared values in the

organisation (Cameron, 2007). Therefore, it can contribute to knowledge distribution at the right place and time, especially in management activities of knowledge chain.

The firm values are not constant and they altered based on objective, structure, assignments and competing value dimensions in CVF. For instance, when an organisation intends to set a research program to produce new products or do innovative activities, it is required to improve the flexibility structure and external tendencies of the organisation. In this case, the competing value is driven towards an adhocracy culture (Gray & Densten, 2005).

Adhocracy value involves a flat structure and employees rely more on external expertise to apply and adopt their respective proficiency. The typical characteristic of adhocracy value is usability in temporary, unique and dynamic environments. In order to respond to rapid world changes, adhocracy value tends to innovation and creation. The goal of adhocracy value is to promote creativity in the firms, while the environment is ambiguous, uncertain, and overloaded with information. Adhocracy value prepares an appropriate prerequisite for knowledge acquisition and leadership. The aim of knowledge leaders is to distribute adequate and precise knowledge in the organisation. Therefore, adhocracy value can support knowledge leaders' readiness for absorbing external knowledge. The success of management activities in the knowledge chain depends on adaptability with competing values.

Hierarchy value is formed by a high control, formal structure or communication and internal tendency in work environments. Hierarchy value guidelines are standard rule, procedures and policies. In some business environments, hierarchy value can support both management and organisational activities of knowledge chain model. Generally, in an organisation, working environment is adopted and formed by top managers, whose decisions can encourage employees to participate in knowledge management practices. In this situation, the management can encourage employees by rewards or penalties

(David et al., 2000). In an organisation, tight hierarchical design, restrictive rule and procedures can support knowledge management activities. Hierarchal value makes an organisation work smoothly and maintain in good coordination with top leaders' commands. Additionally, this value positively affects the stability, efficiency and predictability of the organisation.

Finally, the market value, which has turned into a popular value since the late 1960s, intends more towards the external environment rather than the internal environment. Other specifications of this kind of value are bottom line results, profitability, strength in the market, and secures customer bases. These characteristics are the main objectives for the organisations with similar market values, which makes them the core in competitiveness and productivity. Besides, it fosters knowledge chain activities using the competitive attitude of knowledge. Awareness of the market value encourages employees to facilitate knowledge chain activities by establishing a better communication in knowledge sharing for achieving the competitiveness in the business environments. This kind of value can support the management and organisational activities of knowledge chain model. The fundamental assumption in market values is to apply the external knowledge from market competitors. When an organisation tries to increase its competitiveness; it is derived toward improving the competitiveness by applying the external knowledge in the organisation.

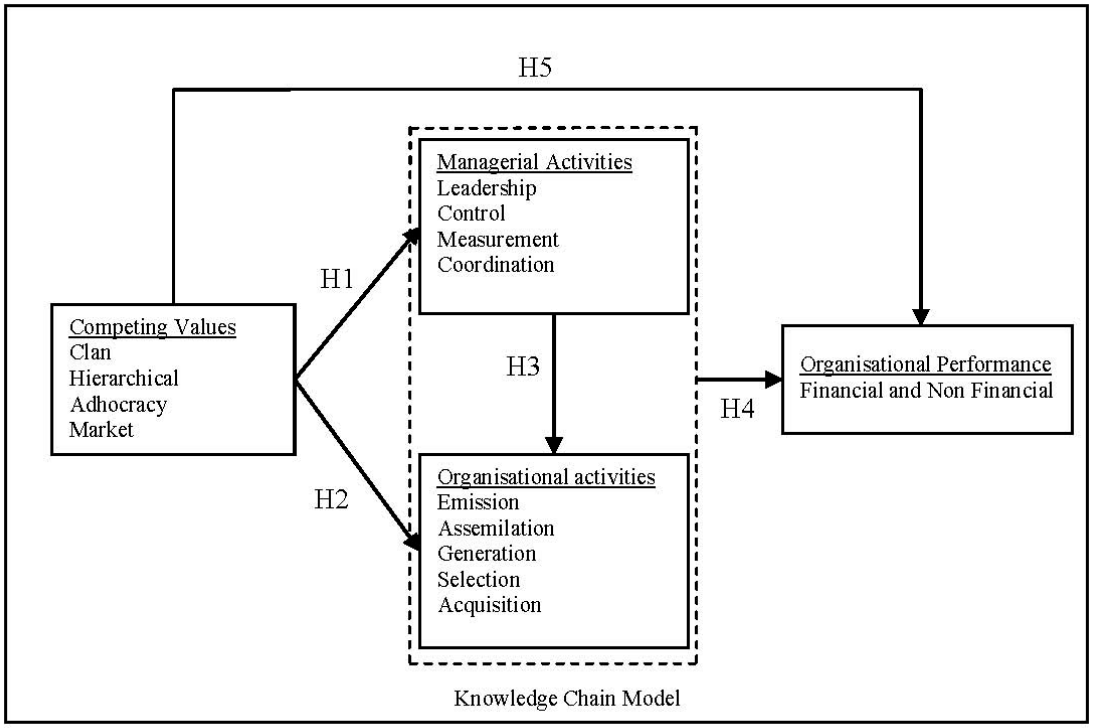

Figure 2-3 : Theoretical framework

Source: Author

2.10.2. Hypothesis Development

The research hypotheses are formulated based on the theoretical model consisted of KCM, CVF and OP, which cover the research questions. As the theoretical framework (Figure 2-3) suggests the focus of this study is on the competing values as an independent variable. In the hypothesised model, CVF can be considered as the independent, the primary and secondary activities of KCM as a mediating and organisational performance as a dependent variable. The main hypothesis of this research is to what extent the competing value framework is related to knowledge management activities and organisational performance and the extent of the mediating effect of KCM on organisational performance. The following sections discuss the relations in the framework.

2.10.2.1. Competing Values and Management Activities

In order to see the relationship between competing values and management or secondary activities of knowledge chain, mentioned in the previous sections, competing

value designed a framework, which including of two dimensions and illustrates four existing values in the organisations. These axes depend on organisational structure, which range from low control (flexibility) to stability (high control) and from the internal to external tendencies. These dimensions produce four quadrants, which specify the competing values, or dominated value type in the organisation. These dominated values are defined by the degree of organisational control which is flexibility or stability, and internal or external tendency. The internal tendencies integrate inner processes and external tendencies concentrate on external environments, differentiation and competition with outsiders on the other hand.

The vertical axe of the CVF represents a continuous range from pliability, adaptability and flexibility with less control on one end, to consistency, durability and stability with high control on the other end. In relation between competing values and knowledge chain activities, individuals are the core value producers, whether in term of competing values or knowledge activities. In the context of individuals, CV dimensions distinguish organisational values that make individual learning inductive by their readiness to follow knowledge activities and by communicating live notions, ideas, and information, which considered as a supportive action for KCA (Johnston & Lawrence, 1991). For instance, clan values, by flexible structure, along with internal tendency, can support management and organisational activities of knowledge chain model via collaboration, which may facilitate communication and sharing knowledge. Here, organisations can create collaborative value with encouraging people to join training classes, workshops and symposia. These activities can support knowledge leaders (KL) with management activities such as leadership, coordination, control, and measurement.

Adhocracy value, with a flexible and adaptable structure, tends to creation and innovation and depends more on external capabilities. In this case, adhocracy value would support MA in KCM, especially KL in the organisation. Adhocracy value

supports MA by acquiring external experts or skilled workers in order to increase organisational knowledge for innovativeness and creativity. Management activities also can be supported by adhocracy by focusing on external opportunities, such as knowledge acquisition, identifying future knowledge trends, and chasing innovative ideas.

Market value can support MA of the knowledge chain model by adhering to the best way of concentrating on maintaining objective, monitoring progress, gathering and analysing data. The market value, which produces by the organisation, can support management activities by acquiring external experts with high control and designed target in market completion. This value tends to support knowledge control and measurement in the organisation for increase competitive advantage or performance (Cameron, 2007).

As mentioned in section 2.6, some researchers, such Lawson (2003), Omerzel et al. (2011), Suppiah and Sandhu (2011), Sanz-Valle et al. (2011) and Liao et al. (2012), have studied the relation between organizational culture and knowledge management activities. Although, they did not consider knowledge chain model in their researches, the studied constructs are somehow similar to this research.

Based on the literature, the first hypothesis and sub-hypotheses are proposed as follows:

Hypothesis 1: There is a significant relationship between competing values and management activities of KC?

Sub hypothesis 1a: There is a significant relationship between clan value and management activities of KC.

Sub hypothesis 1b: There is a significant relationship between hierarchy value and management activities of KC.

Sub hypothesis 1c: There is a significant relationship between adhocracy value and management activities of KC.

Sub hypothesis 1d: There is a significant relationship between market value and management activities of KC.

2.10.2.2. Competing Values and Organisational Activities

The values, which embed in competing value framework, permit employees to practice or participate in organisational or primary activities in knowledge chain. Competing values provide opportunities for employees to exploring new ideas and techniques indirectly. In addition, CV in the organisations provides environments for KMA, whether available knowledge comes from external or internal. Nonaka and Takeuchi (1995) discussed that the knowledge transaction practice among individuals and groups in the organisation leads to knowledge creating process

Organisational values orient the employees toward assimilation, emission, selection, generation and acquisition of appropriate knowledge in new production approaches. Dominant competing values of the organisation can support each knowledge activities such as obtaining licenses or patents, internal knowledge training, and knowledge generation via collaboration by cultivating organisational values. An organisation enhances the perception of employees by encouraging them to fully utilise knowledge practices, which lead to organisational performance.

Although previous researchers (Caloghirou et al., 2004) argued that organisational culture supported and directed knowledge management activities or practices, according to Cameron (2003), CV provides platforms for knowledge activities. Moreover, researches conducted by Lawson (2003), Omerzel et al. (2011), Suppiah and Sandhu (2011), Sanz-Valle et al. (2011) and Liao et al. (2012) indicated that knowledge management activities are influenced by organizational culture. Although some

similarities can be found between considered activities and knowledge chain constructs, they did not use the same variable as this research.

Based on the above reviewed literature, the second hypothesis and sub-hypotheses that are tested in this thesis are:

Hypothesis 2: There is a significant relationship between competing values and organisational activities of KC.

Sub hypothesis 2a: There is a significant relationship between clan value and organisational activities of KC.

Sub hypothesis 2b: There is a significant relationship between hierarchy value and organisational activities of KC.

Sub hypothesis 2c: There is a significant relationship between adhocracy value and organisational activities of KC.

Sub hypothesis 2d: There is a significant relationship between market value and organisational activities of KC.

2.10.2.3. Management Activities and Organisational Activities

Two groups of knowledge activities are embedded in a model based on KCM, management and organisational activities of KCM. Although the two groups of activities combined within one model, this research evaluates the position and relation between management and organisational activities in knowledge chain. This relation shows the correlation between management and organisational activities of knowledge chain in service firms in Iran. These two variables can lead to the failure or success of the knowledge chain model in an organisation.

The study conducted by Holsapple and Singh (2001) indicated the positive significant relation between knowledge management and organisational activities of knowledge chain. This study attempts to test the significance of this relation in Iranian service firms. Based on the foregoing, the third hypothesis is stated. Thus:

Hypothesis 3: There is a significant relationship between management and organisational activities of KC.

2.10.2.4. Knowledge Chain Activities and Performance

Primary and secondary activities of KC, which are called as organisational and managerial activities, respectively, are acquisition, selection, generation, emission, assimilation, measurement, control, coordination and leadership knowledge activities. Based on several researches in the field of knowledge management these knowledge practises, have the capability of influencing organisational performance. Holsapple et al. (2007) stated that the knowledge chain model possesses a theoretical base for linking KM activities and overtures towards competitiveness, which in turn affects organisational performance. Their empirical research discovered that each of nine knowledge chain activities could achieve organisational competitiveness and improve organisational performance through productivity, agility, innovation, and reputation (Holsapple et al., 2007). Previous researches investigated one or two constructs' of KCM separately; however, this research studies all constructs of KC in one model.

There are several empirical researches, which indicate that management and organisational activities affect organisational performance. The investigations of the link between knowledge management practice and organisational performance offer definitive results. For instance, in Pakistan's SME sector, Ali (2010) conducted an empirical research that shows the significant impacts of KMP on performance of the organisation. In addition, Muhmmad (2010), looked into a similar issue, but in the context of educational institution to find out the effect of KMP and performance in these organisations. Moreover, Some researchers such as Holsapple and Singh (2001), Darroch (2005), Zack et al. (2009), Mills and Smith (2011) and Hsiao et al. (2011) have studied this relation in different organisations. The studies found that KMA have a

positive and significant relationship with performance. Therefore, the fourth hypothesis is developed as:

Hypothesis 4: There is a significant relationship between knowledge chain activities and organisational performance.

Hypothesis 4a: There is a significant relationship between organisational activities and organisational performance.

Hypothesis 4b: There is a significant relationship between managerial activities and organisational performance.

2.10.2.5. Competing Values and Performance

The relationship between competing values and organisational performance has been studied in several researches, such as Zhang and Zhu (2012). They investigated the impacts of four types of competing values constructs (clan, adhocracy, hierarchy and market) on organisational performance. Their study found out that these competing values have an impact on organisational performance. They found out that the more the tendency of an organisation toward adhocracy or market, the higher the organisational performance is an, on the contrary the more the tendency of an organisation toward clan or hierarchy, the lower the organisational performance is. This research, to examine the relation between competing value framework and organisational performance, test the following hypothesis and the related subs:

Hypothesis 5: there is a significant relationship between competing values and organisational performance

Sub hypothesis 5a: There is a significant relationship between clan value and organisational performance.

Sub hypothesis 5b: There is a significant relationship between hierarchy value and organisational performance.

Sub hypothesis 5c: There is a significant relationship between adhocracy value and organisational performance.

Sub hypothesis 5d: There is a significant statistical relationship between market value and organisational performance.

2.10.2.6. The Mediation Effects

In the knowledge chain model, knowledge activities are divided into five primary (organisational) and four secondary (managerial) activities. The primary or organisational activities of KCM execute knowledge processes in the organisation. These activities are recognised as the generic KM activities, which affect the knowledge chain sequences cycle. On the other hand, the secondary activities of KCM are considered as supportive, and these activities are the criteria of performance of the primary activities. Management activities are influential in the conduct of organisational activities and KCM. Based on Holsapple (2004), KCM model is supported by both explanatory and survey evidence. There are some researches investigating the relation between CV and knowledge management such as Omerzel et al. (2011), Lawson (2003). Besides, the mediating effect of the knowledge management process is studied by Zheng et al. (2010). However, this study examined the mediation effect of management activities of KC between CV and organisational activities. Therefore, the sixth hypothesis tests the mediating effect of management activities in the relation between CV and organisational activities to verify the effect of management activities on organisational activities.

Moreover, several researchers studied the relation between organisational culture with competing values constructs and OP, considering different knowledge management constructs as mediators. These mediators included knowledge generation, sharing and utilization (Zheng et al., 2010), innovation capacity (Chih et al., 2011), knowledge

creation and sharing (Haque & Anwar, 2012) and absorptive capacity, which consisted of acquisition, assimilation, transformation, and exploitation, (Cho, 2013).

In this study, organisational culture is substituted with CV, which possesses a more precise concept than organisational culture. Moreover, the KCM, which describes KM activities of an organisation, can concentrate on the competitive achievement and performance. All organisational and management activities of knowledge chain model consist of the constructs studied in previous researches individually or in-group. Therefore, this study want to see the KCM as a mediator in the relationship between CV and OP, and the seventh hypothesis tests this mediating effect. Therefore, the six and seven hypotheses in this study developed as:

Hypothesis 6: MA of KCM mediates the relationship between OA and CV.

Hypothesis 7: KCM mediates the relationship between CV and OP.

2.11. Summary of Relevant Literature Review

Among different researches conducted by various authors, some have more similarity to considered relations and hypotheses in this research. The detailed obtained results of these researches can be found in Sections 2.4, 2.6 and 2.7. In what follows we have a short review of the relevant results.

The relation between competing values and different knowledge management activities (KMA) are studied by authors such as Lawson (2003), Omerzel et al. (2011), Suppiah and Sandhu (2011), Sanz-Valle et al. (2011) and Liao et al. (2012). The obtained results which will be used while evaluating research questions one and two are summarised in the following table.

Table 2-4:

Summary of relevant literature review of CV-KM

Author	KMA	Results (CV → KMA)
Lawson (2003)	knowledge creation, capture, organisation, storage, dissemination and application	Clan: Not Supported Hierarchy: Supported (N) Adhocracy: Not Supported Market: Supported (P)
Omerzel et al. (2011)	knowledge generation, storage, transfer, and application	Clan: Supported (transfer and application) Hierarchy: Not Supported Adhocracy: Not Supported Market: Supported (storage, transfer and application)
Suppiah et al. (2011)	tacit knowledge sharing behaviour	Clan: Supported (P) Hierarchy: Supported (N) Adhocracy: Not Supported Market: Supported (N)
Sanz-Valle (2011)	organisational learning and technical innovation	Clan: Not Supported Hierarchy: Supported (N) Adhocracy: Supported (P) Market: Supported (N)
Liao et al. (2012)	knowledge acquisition, organizational learning and organizational innovation	Clan: Supported (P) Hierarchy: Supported (N) Adhocracy: Supported (P)

Source: Author (N=Negatively, P=Positively)

The relation between management activities and organisational activities of knowledge chain is studied in a research conducted by Holsapple and Singh (2001).

Table 2-5:

Summary of relevant literature review of MA-OA

Author	Results (MA → OA)
Holsapple and Singh (2001)	Supported (P)

Source: Author (N=Negatively, P=Positively)

Some researchers such as Holsapple and Singh (2001), Darroch (2005), Zack et al. (2009), Mills and Smith (2011) and Hsiao et al. (2011) studied the effect of knowledge management activities on organisational performance. These researches indicate the positive relationship between different knowledge management activities and firm performance.

Table 2-6:

Summary of relevant literature review of KMA-OP

Author	KMA	Results (KMA → OP)
Holsapple and Singh (2001)	Knowledge Chain Model	Supported (P)
Darroch (2005)	knowledge dissemination, knowledge acquisition and responsiveness to knowledge	Supported (P)
Zack et al., (2009)	knowledge management practices	Supported (P)
Mills and Smith, (2011)	organizational structure, knowledge acquisition, application and protection	Supported (P)
Hsiao (2011)	dissemination and knowledge acquisition	Supported (P)

Source: Author (N=Negatively, P=Positively)

The effect of competing values on organisational performance is studied by Zhang and Zhao (2012). As mentioned in section 2.7, different researchers studied the relation between organisational culture and organisational performance, but to the best of our knowledge, Zhang and Zhao (2012) are the only researchers which studied the effect of competing values on organisational performance.

Table 2-7:

Summary of relevant literature review of CV-OP

Author	OC	Results (CV → OP)
Zhang and Zhu (2012)	Competing Value Framework	Clan: Supported (N) Hierarchy: Supported (N) Adhocracy: Supported (P) Market: Supported (P)

Source: Author (N=Negatively, P=Positively)

This study considers the mediating effect of KCM between CV and OP. Besides, it focuses on the mediating effect of MA of KCM between CV and OA of KCM.

Historically, the mediating effect of knowledge management activities between organisational culture and organisational effectiveness and organisational performance is studied by authors such as Zheng et al. (2010), (Chih et al., 2011), Haque and Anwar (2012) and (Cho, 2013).

Table 2-8:

Summary of relevant literature review of mediating effects

Author	IV	MV	DV	Mediating Effect IV→MV→DV
Zheng et al. (2010)	organisational culture, structure and strategy	knowledge generation, sharing, and utilization	organisational effectiveness	Supported
Chih et al. (2011)	organisational culture	Innovative capacity	organisational performance	
Haque and Anwar (2012)	organisational culture	knowledge creation and sharing	organisational performance	Supported
Cho (2013)	organisational culture	acquisition, assimilation, transformation, and exploitation	organisational performance	To Some Extent

Source: Author (IV=Independent Variable, MV= Mediating Variable, DV=Dependent Variable)

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1 Introduction

The main purpose of this work is to test the effect of competing values on the knowledge chain model and organisational performance in the knowledge intensive service firms in Iran. The study recognizes that, it is essential to organize the appropriate choices of methods, which enhances the validity of the study and its results (Fowler, 2009). In order to determine the best method for this research, attempts are made to explain the similarities and differences between qualitative and quantitative methods in this context, and the logic behind choosing qualitative method. This chapter is followed by the way of conducting this research, designing the questionnaires and selecting the sample. Moreover, it also clarifies how the participants were contacted. At this stage, Bickman and Rog (2009) emphasized the importance of finding tools that can best fit the research question, context, and the available resources for each.

The next stage after data collection, which is explained in this chapter, is data editing, which is consisted of data coding and screening, missing data, test of normality, etc. The closing sections of this chapter are devoted to a short review of structural equation modelling as the analytical method used in this research. The first stage of this method, which is the measurement model evaluation, is studied in this chapter and the second stage is left to chapters four, five and six.

3.2 Overview

This section provides an overview of the methods used while answering the research questions and the related proposed hypotheses, presented in chapters one and two, respectively. These sequences are summarised in Figure 3-1.

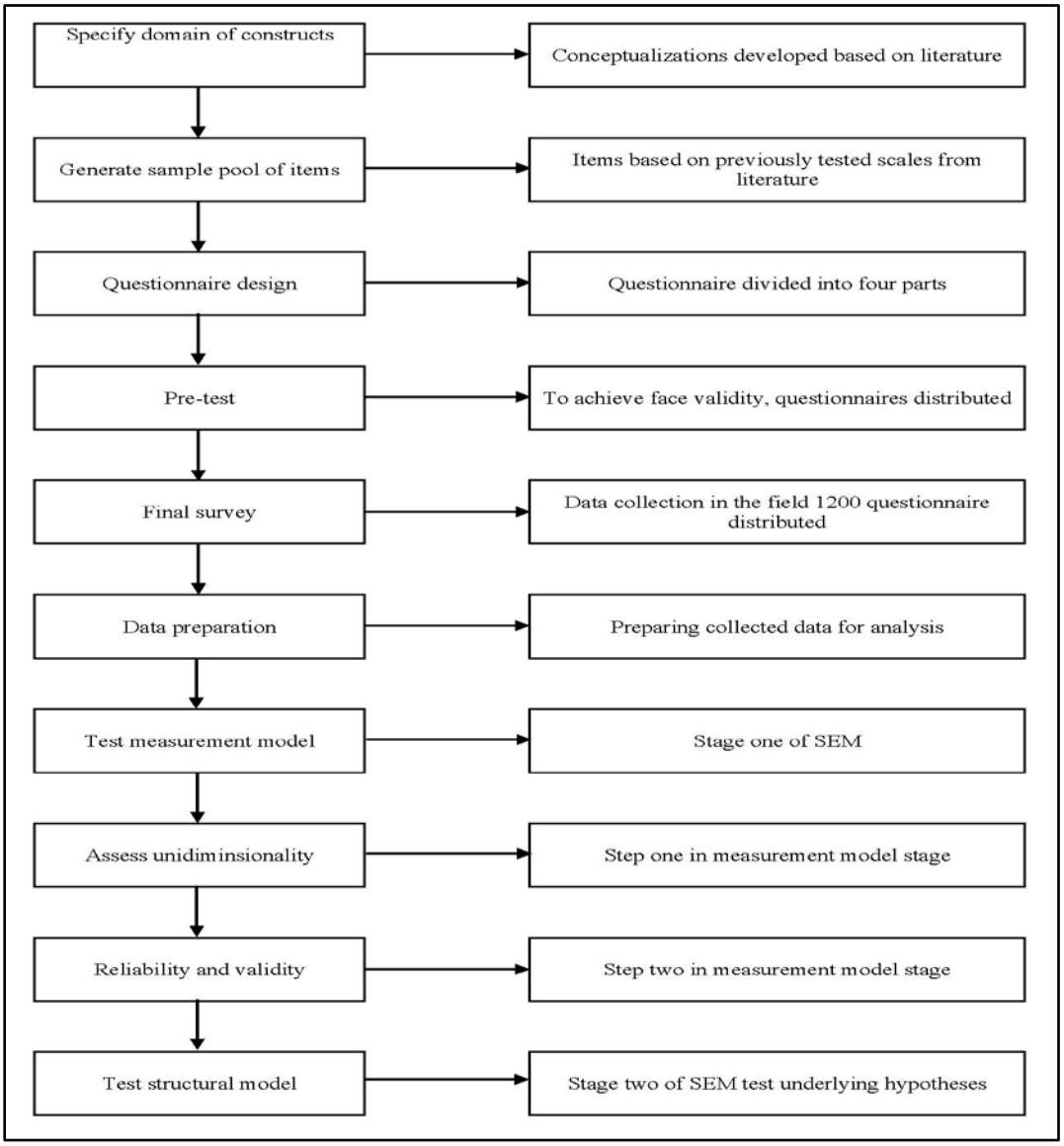

Figure 3-1: Methodology overview

Source: Author

A quantitative method has been chosen based on self-administered questionnaires, as a mean to collect data based on constructs, which are proposed in the theoretical model. These constructs are competing values - clan, hierarchical, market and adhocracy values- knowledge chain model -primary and secondary activities- and organisational performance. These constructs were listed in 5-point Likert scale multi-item measures, and the selected items were adapted from previously tested scales. The questionnaire of this thesis is divided into two parts: constructs and demographic questions. Cross-

cultural methodological researchers (See Brislin et al., 1973 and Malhotra, 2008) suggested application of a dual strategy of back translation, since this research questionnaire was distributed in a non-English-speaking area. In order to ensure clearness and understandability of the questionnaire's wordings and the equivalence of the instrument, the researcher should conduct a pre-test, before the distribution of the final questionnaire. Pre-testing is essential for discovering possible problems in the questionnaire and checking the face validity of the measures. The next step after pre-testing is conducting the final survey. The respondents in this research are from the service sector in banks, telecommunications, and universities in Tehran were surveyed between July 2009 and October 2010. In total, 1200 questionnaires were distributed to the top, middle and low managers, depending on the service sector and the list of available managers in service firms. 323 questionnaires were returned, with 302 valid questionnaires which are used in analysing the data. The criterion for choosing the service firm was their involvement in knowledge intensive firms.

Data analysis is performed using two statistical softwares. First, the primary steps in data analysis, such as the steps taken for data preparation and providing data with descriptive statistics, are taken by SPSS version 20 (SPSS is the abbreviation of the Statistical Package for the Social Sciences). Second, Structural Equation Modelling (SEM), using Confirmatory Factor Analysis (CFA) to test the measurement model, is conducted by AMOS software version 20. As it is recommended by Anderson and Gerbing (1988), SEM was carried out in two stages. In the first step, the measurement models are evaluated and the second step is devoted to assessing the structural model. The aim of the measurement model, as the first step of SEM, is to develop the underlying measures. Using CFA, the evaluation of the measurement model is done in two stages; unidimensionality and reliability and validity of the underlying constructs. In order to investigate the reliability of constructs, Cronbach's alpha coefficient and

CFA are used to assess the internal consistency of the measures. Besides, the constructs are verified for criteria, construct (including convergent and discriminant) and external validity. After developing the scales in the first stage, the hypotheses considered in this research are tested in the second stage, which is the structural model.

3.3 Justification of Research Method and Design

In order to determine the research approaches and strategies that satisfy the research questions, this study seeks to design a proper research methodology. This methodology would be appropriate in the research context and the philosophy of the knowledge. The determination of the appropriate method requires the clarification of the epistemology and ontology of the knowledge chain.

3.4 Research Philosophy

Research philosophy is a conviction of the most proper and suitable way of collecting and analysing data of a phenomenon (Levin, 2000). Some philosophical viewpoints, used to interpret an event, seem to be problematic for natural scientists from other fields of science (May, 2011). The natural sciences, as a branch of science, are looking to enlighten the prescripts, patterns and rules that govern the natural world using scientific methods. It is essential to have ‘ways of viewing’ and ‘ways of interpreting’ to accurately perceive the world we are living in, and they will enable us to comprehend reality, ideas and facts. Theoretically, in order to enable the explanation of things, there must be an appropriate relation between the expressed statements, the adapted methods for making such statements, and the philosophical perspective implemented to inform the methods (Limpanitgul et al., 2009). In each of these aspects, there are points appertain to ontology, epistemology, and methodology. Ontology focuses on the nature of reality, where the crucial question is whether social entities can or should be considered, and whether social constructions are built-up from the recognition and

practice of social actors. On the other hand, epistemology, make a connection between the acceptable forms of knowledge in a field of study. The main key in epistemological question is “can the solution to the study of the social world be similar to the approach of studying the natural sciences?”(Saunders et al., 2009). Epistemology provides the philosophical foundation and credibility, which legitimizes knowledge and the preceding structure provided through a rigorous methodology.

Epistemology is one of the branches of philosophy that concern with the nature of human knowledge (Schmidt et al., 2010). Knowledge is obviously and deeply in debt to many ideas, derived from epistemology and there are many works in the field of KM detailing epistemology. Explicit aspects of knowledge attract insights from epistemology into the theoretical development of KM. For example, innovation works of several scholars, such as Sveiby (2001) and Nonaka, espouse the philosophical perceptivity in epistemology. On the other hand, tacit knowledge, which here refers to personal and internal aspects of knowledge, mostly focuses on the outcomes of knowledge. This implies that objects retrieved by entire organisations, groups or individuals actually represent reality. In order to understand clearly how knowledge epistemology contributes to research methodology, its different perspective and aspects should be clarified beforehand.

In this research, knowledge epistemology is not just for knowledge justification; it also contributes to better understanding of knowledge applications while dealing with the practical aspect of the business that engages knowledge-based activity. Therefore, knowledge epistemology is primarily involved in knowledge processes, such as acquisition, selection, assimilation, emission and generation, and their applications within a collaborative environment.

In addition, knowledge Chain (KC) concerns several aspects of knowledge within an organisational framework: the real knowledge of the individuals within the organisation,

including their practical knowledge, tacit knowledge, and implicit knowledge. Hence, knowledge in KC should know far more than just individual certainty about the world; it must also contain practical ability, as well as conceptual understanding. Essentially, knowledge in KC is not only concerned with the rationale of knowledge, but it is also concerned with the reproduction, reserve, and which processes of knowledge in the together and shared sense. Therefore, the value of the concept of knowledge in KC is reasonably different from its value for philosophers. The point that is espoused here is that as far as KC is concerned, there are significant limitations in primitive approaches to epistemology.

The main topic in epistemology is the status of the result, followed by the process of getting there, and the results after the acquiring knowledge. These are precisely the facts that are of interest in the KC field of study. Epistemology offers a lot of assistance concerning some forms of explicit knowledge, however, beyond that, it is of little to no use. Besides, we could not stray very far from the standard epistemology in KM field of study, which cannot dismiss the importance of the skills of traditional epistemology into the nature of knowledge. Although different disciplines have fundamentally different interests in the concept of knowledge, the concepts in each discipline are still very closely related. The standard approach in epistemology may be too limited and too narrow for KM, but it is still relevant. At its foundation, the KM conception of knowledge should at least be compatible with the epistemological definition, since even though the disciplines have different interests in the concept and base, they are still essentially the same idea. Factual, tacit, practical, technical, and other forms of knowledge must still meet certain criteria.

3.5 Research Approach

The research approach involves the relationship between the theory and data of deductive or inductive approaches (Bryman & Bell, 2007). Deductive approach

processing emanates from a more general level and narrows to a more specific domain; informally called the "top-down" approach. For example, this approach begins with a theory that narrows it down into a more specific hypothesis, which can be tested in order to generalise the result to larger populations. To do so, the researcher should use his/her observations to address the hypotheses. These activities will ultimately lead the researcher to hypotheses testing with specific data, in order to confirm or reject the original theories. On the other hand, inductive approaches deal with hierarchy in the other way around, moving from the particular and specific observations to broader generations and theories, informally called the "bottom-up" approach. In the inductive approach, the researcher begins with specific observations and measures, and tries to discover patterns and rules of subjects, and make observation for some tentative hypotheses that can be explored in order to develop some general theories.

This research is going to use the deductive approach which presents the most usual view of nature, and represents the relationship between theory and research data. To this end, the researcher deduces a hypothesis relieved from the problem statement, based on a particular domain of theories, including resource based view theory that is subjected to empirical scrutiny (Bryman & Bell, 2007). In this research, the deduced hypotheses are described from KC’s field of study and converted into operational terms. After obtaining the operational terms, the researcher has to define the data collection process with regards to the concepts present in the hypothesis (Bryman & Bell, 2007). In this research, the resource base theory.

3.6 Research Strategy

A quantitative approach is the main strategy used in this research. It places more emphasis on the measurement and analysis of the data, and applies a deductive approach to identify the relationship between theory and research data, in order to examine the applied theory. In other words, quantitative methods, measures, counts, or questions are

asked based on a designed questionnaire to determine the answers, which can be numerically coded and analysed. (Bryman & Bell, 2007). This research approach is quantitative in nature, as it uses the quantitative strategy because it is an appropriate answer for the questionnaire in the research questions. Meanwhile, this approach will allow measurement of research variables derived from the knowledge chain model and establish differences between the two groups of activities, including management activities and organisational activities. In this quantitative approach, the results are able to present a broad view of a service firm population, based on the collected data from a large number of samples. It is also possible to clarify the key differences in the characteristic of populations, which places heavy emphasis on the population to determine the statistical relationship between a problem and its causes, whereas, in the qualitative approach, the researcher intends to explore particular issues. This study attempts to test the theory and be less generalised with respect to a broader population. In terms of assessing Competing Value and performance, this research intends to contribute to the work by Quinn and & Rohrbaugh (1981) who established the competing value model. In addition, this research carried out the organisational performance measurement approach established by Govindarajan and Gupta (2001). This provides a proper standard for making these distinctions, and provide the basis for a more precise estimate of the degree of relationship between the variables. Since it is explained in philosophy in terms of epistemology and tautology of the KCM, and the objective results of the research, which could be seen in the outcome of the service firms, the research adopts the quantitative research approach. Table 3-1 shows the free comparison between qualitative and quantitative approaches.

Table 3-1:

Qualitative & quantitative approaches

Features of Qualitative & Quantitative Research	
Qualitative	**Quantitative**
"All research ultimately has a qualitative grounding" - Donald Campbell	"There's no such thing as qualitative data. Everything is either 1 or 0" - Fred Kerlinger
The aim is to present description of observations in a complete, detailed way.	The aim is to explain observations by classifying their features, counting them, and constructing statistical models.
What researcher is looking for may not be clear, exactly and in advance.	What researcher is looking for is exactly clear in advance.
It is recommended in earlier stages of a research project.	It is recommended in latter stages of a research project.
The design emerges as the study unfolds. Lay out	All aspects of the study are carefully designed before data is collected.
Researcher is the data gathering instrument.	Researcher uses tools, such as questionnaires or equipment to collect numerical data.
Data is in the form of words, pictures or objects.	Data is in the form of numbers and statistics.
Subjective - individuals interpretation of events is important ,e.g., uses participant observation, in-depth interviews etc.	Objective seeks precise measurement & analysis of target concepts, e.g., uses surveys, questionnaires etc.
Qualitative data is more 'rich', time consuming, and less able to be generalized.	Quantitative data is more efficient, able to test hypotheses, but may miss contextual detail.
Researcher tends to become subjectively immersed in the subject matter.	Researcher tends to remain objectively separated from the subject matter.

Source: Miles & Huberman (1994)

According to Marshall and Rossman (1999, p. 61) research strategy is called "a road map" in the research process. According to Yin (1999), there are five major research strategies in social sciences, including surveys, experiments, archival analysis, historical and case studies.

A survey strategy means a particular technique that collects data and information using questionnaires collected from a sample (Zikmund & Babin, 2007). In this

strategy, the collected standard questionnaire would be understandable and clear for the targeted population in terms of contents and context of the questions and the area of the research. The experimental strategy is to discover the result of manipulating one or more independent variables, and measuring their effect on one or more dependent variables (Mckay & Marshall, 2000). This research does not solely rely on the manipulation of the variables in order to discover the results; it also measures the relationship between the variables or the frameworks. This study does not take into contribution the archival, historical and case study approach. The archival strategy means describing the prevalence or the incidence of a phenomenon. For archival strategy, there are no archived data for the knowledge chain in Iranian service firms to be used for this study. The historical strategy is defined as deals with the past, and can be used when no reporting person from the past is alive (Yin, 1999). Finally, the case study strategy aims is to gain information from one or more similar situations to our research problem area (Yin, 1994). Therefore, this study uses a survey questionnaire to generate data for analysis.

3.6.1 Survey-Based Research

As mentioned in the previous chapter, the theoretical framework was developed using a sample of service firms in Tehran. Based on the following reasons, a self-administered survey methodology is considered as the most appropriate tool for collecting data. One, the position of the respondent, which is vital in relevance to this research, including their knowledge, connection, communication and awareness (Zechmeister et al., 1992). Two, this method is an effective tool, given that there is little or no control over behavioural events (Yin, 1994). Three, this method can be considered as an accurate instrument for collecting information about the sample. Besides, the accuracy of the collected information makes it possible to draw conclusions about the sample and generalize it to the whole population (Chisnall, 1997; Creswell,

1994). Fourth, this method is concerned mainly with significant relationships in the research (Hair et al., 2006). Finally, this method is considered based on speed of operation, response, efficiency. Besides, applicability to large samples (Hair et al., 2006; Sekaran, 2007; Zikmund, 2002), i.e., 200 or more respondents, can be regarded as one of the main reasons for using a survey research method.

3.6.2 Self-Administered Questionnaire

There are several ways as collecting data process such as personal interviews, telephone interview, and self-administered questionnaires. This study chooses self-administered questionnaire technique as an appropriate method for this research. Self-administered questionnaires are defined as "a data collection technique in which the respondent reads the survey questions and records his or her own response without the presence of a trained interviewer" (Hair et al., 2006). Self-administered questionnaires relay more on the clearness of the content than on the skill of interviewers (Zikmund, 2002). This technique has other advantages, including: 1) easy data collection from a representative sample of a large population size presents more accurate information. 2) here, respondents comfort is another point, as they can complete the questionnaire at their own convenience. 3) The other point is wide distribution; the questionnaire can have a wider reach at minimum cost (Zikmund, 2002) .

The form of self-administered questionnaire which is applied in this study is called a drop-off survey. In this technique the questionnaire is delivered to respondents by the interviewer who explains the aims of the survey and how to fill out the questionnaire. The questionnaire is left to the respondent to be completed and picked up by the interviewer at a later date (Hair et al., 2006; Zikmund, 2002). The two advantages of using this method are outlined by Hair et al. (2006).

3.7 Research Design

The research design shows the framework of data collection and analysis. The research design is able to reflect decisions about the priorities of the research process (Bryman & Bell, 2007). This research was designed to adopt the steps categorised in Table 3-2, while also exhibiting the research process chart.

Table 3-2:

Research method

Title	Steps	
Literature Review	Preliminary Literature Review	
	Research Problem Definition Questions Objectives Hypotheses	Theory Exploration Theoretical Framework
	Selection of Basic Research Method Survey (Questionnaire)	
Research Design	Sampling (Survey) Questionnaire Development Pilot Study Refinement of Questionnaire	
Data Collection	Data Collection (Field Work) Editing / Coding of Data	
Data Analysis	Quantitative (Survey) Analysis SPSS and AMOS Descriptive Analysis	
Drawing Conclusion and Report Writing	Interpretation of Results and Findings Conclusion and Recommendations Final Thesis Report	

Source: Author

3.7.1 Research Site

This research follows what other scholars in the field of knowledge management have defined as scientifically necessary for business research (Hair et al., 2011). It describes the research design based on deductive approaches and quantitative strategy.

The selected base research method is the survey. Therefore, the designed questionnaires were distributed among the respondents. To choose the respondents, in the first step, the sampling frame defines the target population. The target population is knowledge workers who are responsible for the knowledge management in the organisation. However, if the knowledge worker is not included in the job listed in the organisation, the questionnaires are distributed between the top, middle and low managers depend on available managers list of the organisations in order to create a clear idea on knowledge management activates and performance constriction in the organisation.

The unit of analysis is the organisation. In order to commence the distribution of the questionnaires, the research project was designed to minimize the potential common method bias caused by data collection from a single source. To avoid the common method bias, some heterogeneous words and bilateral phrases were avoided. Specifically, the responses, regarding the content of the questions, were justified by further explanation for each part. The target respondents were from the management level of the service firm industry, including education, financial and telecommunication sectors. Self-completion questionnaires avoid the possible presentation bias because all the respondents receive the same instrument without the researcher's presence (Cavana et al., 2001; Veal & Ticehurst, 2005).

3.7.2 Sampling Design and Data Collection

In this research, the data are collected from a sample instead of a census. Sampling is a valid alternative to the census, which used to collect data from the whole population of the respondents. Here, probability or representative sampling technique is used.

Probability sampling or representative sampling is mostly connected with survey-based research strategies, in which the researcher relies on the sample to drive conclusion about the population to answer research questions or to meet the objectives. The probability sampling process is divided into four stages. In the First stage, a suitable

sampling frame should be identified based on research questions and objectives. Then a suitable sample size should be determined and the most appropriate sampling technique should be selected. Finally, after selecting the sample, it should be checked that the sample is representative of the population.

3.7.3 Sampling Frame

The sampling frame for any probability sample is a complete list of all the cases in the population from which the sample will be drawn. This study is carried out in service firms in Iran, and it is interested in determining how CV affects the performance of service firms through knowledge chain model. Tehran is selected as the sampling frame for this research, which consists of a complete list of all universities from Ministry of Science, Research and Technology, telecommunication service firms from the Ministry of Telecommunications and all the branches of private and public banks from the central bank of Iran. The frame was selected because Tehran is properly representative of Iran.

Tehran has been chosen as a place to approach the sample because it is centrally located and holds all the main representative knowledge intensive firms in Iran. The major knowledge intensive service firms such as the main educational institute and branches of the universities, the main financial service firms and the central branch of the banks and lastly the telecommunication canters are located in Tehran.

3.7.4 Sampling Technique and Representativeness

Having chosen a suitable sampling frame and established the actual sample size required, the most appropriate sampling technique to obtain a representative sample was selected. Although there are different sampling techniques, such as stratified and cluster sampling, this study adapts the probability sampling technique based on the research question(s) and the objectives.

Stratified random sampling is a modification of random sampling in which the researcher divides the population into two or more relevant and significant strata based on one or a number of attributes. In this survey the whole sample frame which consists of educational institutes, telecommunication and financial institutes are divided into two or three significant strata. In fact, the sampling frame is divided into a number of subsets. A random sample (simple) is then drawn from each of the strata. The reason why stratified sampling is inapplicable in this research is that it provides inter-regional evaluations, but slightly reduces the confidence interval as it extrapolated to the population, because the subjects were randomly selected from the population stratum, rather than the whole population.

In the case of the cluster sampling, which is similar to stratified sampling the researcher needs to make divisions within the research population prior to sampling (Henry, 1990, p. 95). The groups are termed clusters in this form of sampling and they can be based on any naturally occurring grouping. In this research, Tehran has 21 district areas and for sampling, the researcher distributes the questionnaires based on the geographical distinction rather than service activities. Although, cluster sampling is quick, it is not as accurate as simple random sampling and it reduces the precision. Consequently, the simple random sampling for each stratum was applied to get direct results and to generalise it. The regions, indirectly and properly, generate valid generations close to the population of service firms (Williamson & Bow, 2002).

In order to deliver the questionnaire to the government organisations, the permission of the head of the departments from the headquarters was sought,. Measures of influence and commitment of the subjects were used to raise the level of attention, and to work against difficulties such as lack of time, readiness to respond or the observed absence of value creation for the enterprise.

Contacting the people by phone beforehand to clarify to whom the questionnaire should be addressed to and requesting their approval proved quite satisfactory. Officials appreciated the extra effort of asking for their authorization in the beginning. The questionnaire was mailed to all managers who were expecting it before hand, and therefore, they did not consider the incoming mail as spam. The projected professionalism increased the level of perceived severity and legitimacy. The full personal addresses and signatures with blue ink were done, and all the letters were printed on official university letterhead.

The modified cover and instruction letters included sufficient information on how to complete the questionnaires. A contact number and email address were provided in case the respondents have any ambiguity with the interviewer. The cover letter expressed the missions and the relevance of the study, and clarified that the investigation is scientific and non-commercial. Additionally, it assured that no sensitive or specific ambitious information is sought after and that all responses and statements stay confidential and are reported in the aggregated form only. This guarantee of anonymity and respect was an important measure of encouragement for participation in the survey. It also reduced the possibility of follow-up measures.

As a return for their investment, the participants could attain the results of the study whenever they wished. Finally, it was pointed out that participation offers a reflection of the firm's actions, and allows comparison with other firms of similar size, and so could possibly identify ideas on how to improve overall business performance.

3.7.5 Questionnaire Design

The main purpose of the questionnaire's design was to gather and discover the meaningful raw data for hypothesis testing as mentioned in chapter one above. The questionnaire design is done in several stages. The first stage specifies the required information, which is necessary for this research and determines where or how it should

be distributed. The following stage determines the survey method, operational definition, developing and evaluating questionnaire.

3.7.6 Specification of the Required Information

The required information for this research objective was deduced from literature review, mentioned in chapter two, and analysis notes from previous qualitative and quantitative research and expertise devise. Both factors helped identify the variables and constructs applied in the questionnaire design. In order to achieve maximum validity and reliability, the research instruments were based on specific empirical support from the literature of the knowledge chain model, competing value model and organisational performances, which makes appropriateness and cleanliness the most important point in the questionnaire design. The appropriateness of the questions means that the nature of the variable tapped such as subjective feelings or objective facts determine the type of questions that were asked. Objective variables, such as demographic data of respondents, are exploited as a “single direct question”, preferably one that has an ‘ordinal scale’ for a set of categories would be employed.

To apply the English questionnaire into a Persian questionnaire, the questionnaire needs to be translated in accordance with the language and the wording of the Questionnaire. In order to ensure that the translation is consistent and as similar as possible, the researcher double-checked questionnaire. For this purpose, the choice of words depends on the respondents’ level of education and the usage of terms and idioms in the culture concerned. Therefore, in this research, the Persian language is chosen as the lingua Franca. An expert in knowledge management was asked to translate the final English version of the questionnaire. Then, the Persian questionnaire was given to another expert in Knowledge Management with vast experience in this field of study, and he translated the questionnaire back to English. The questionnaire commenced with introduction letters authorized by searcher’s supervisor.

3.7.7 Instrument

The survey consists of four portions: the initial portion comprises of items and insight on the competing value model in the service firms in Iran. The second portion was to check the entire perception of Knowledge chain model activities; Next portion was to achieve additional points or viewpoints that could produce statues of an organisational performance. The final portion involves gaining demographic information such as gender, age, position, region, major field, year they joined the organisation, and year of ongoing area/position of the responsibilities. All items were operationalised a five-point Likert scale ranging from 1 to 5: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree.

The package of questionnaire with stamp envelope attached for this purpose. They were asked to complete and send back the questionnaire through mail, which is prepared and designed by the researcher beforehand. Even if several respondents are not professionals in KCM or KM, they were asked to honestly respond to the survey from the perspective of regular workers. In surveys with closed questions, i.e. questions in which all possible answers are identified and one of the answers is chosen by the respondent, an interval scale for measuring the responses is frequently applied. In the interval scale, there is no true zero point and the intervals between points are assumed to be equal. A type of the interval scale, which is the most commonly used in surveys, is the so-called Likert scale. A typical Likert scale has five to nine distinct points. It is usually an odd number since there must be a midpoint that is a ‘‘neutral’’ choice and each point reflects a score on the continuum.

The respondents choose the item on the scale that indicates their beliefs. As mentioned the answers are itemized as “strongly disagree”, “disagree”, “neutral” and so on and these points are typically converted to a 5-point scale (1, 2, 3, etc.). The 5-point Likert item could be made into a 7-point scale by adding “very strongly agree” and

"very strongly disagree." There is no apparent advantage to a 5- or a 7- (or more) point scale. Although a 5-point scale commonly provides enough discrimination among levels of agreement, it might become a 3-point scale in practice, since some people tend to avoid making the choices at each end of the scale.

On the other hand, avoiding the extremes, a 7-point scale still yields 5 point scale, but, adding the extra level of discrimination can increase the required time to complete the survey. Consequently, the 5-point Likert scale is commonly applied in closed-question surveys. Finally, it is generally suggested to avoid mixing formats. Therefore, if one decides to use a 5-point Likert scale, it should be used throughout; 5 and 7-point scales must not be mixed in the same survey.

3.7.8 Scale Development

Table 3-3 presents the number of items, the number of questions about each item and the sources from which the questions, used in the questionnaire, are derived.

Table 3-3:

Scale development

Variable	Items	Questions	Source
Competing value model	4	20	Cameron and Quinn (2005) Cameron et al (2006)
Knowledge chain activities	9	36	Holsappel and Singh (2005)
Organisational Performance	2	10	Govindarajan and Gupta 1985
Personal Background Company Characteristic		10 5	Bradburn et al., (2004)

Source: Author

3.7.9 Pilot Testing and Assessing Validity

Pilot testing is a step which is taken before collecting data by using the questionnaire. This helped to refine the questionnaire and make it uncomplicated for respondents to

answer the questions. In addition, the pilot test provides the researcher with an estimation of validity and the likely reliability of the data that will be collected. Another purpose of pilot testing is to gain the picture of respondents' feeling and ensure that collected data will help answering the research questions. For this purpose, the researcher carried out face validity and content validity. Face validity answers that the questionnaire makes sense. As part of the pilot study, each completed pilot questionnaire is rechecked to make sure that respondents have had no difficulty understanding and answering the questions and the questions have followed all instructions correctly (Fink, 2003, p. 108). The content validity ensures that the measurements in the questionnaire provide adequate coverage of the knowledge chain, competing values and the organisational performance questions' content for measuring these variable.

The adequate coverage is firstly interpreted by careful definition of the research through the literature review and prior discussion with others, where appropriate. Another is to use a panel of individuals to assess whether each measurement question in the questionnaire is 'essential', 'useful but not essential', or 'not necessary'. Initially the researcher asked an expert group to comment on the representativeness and the suitability of the questions. As well as allowing suggestions to be made on the structure of the questionnaire. This helped establish content validity and enable the researcher to make necessary amendments prior to pilot testing with a group as similar as possible to the main population in the sample. For this purpose, the literature review recognised 18 well-known KM researchers through their publication in several well-known ISI journals.

Therefore, a set of problem statement, research objectives, research questions, theoretical framework and questionnaire were sent to the 18 KM researchers via email. Ten of these e-mails were not received by the researchers due to incorrect e-mail

addresses and eight of them were answered and comments were received. The next step was the recognition of Iranian expert judgment validity. In this way, the questionnaire was given to 2 KM expert, 2 service firm companies, 2 KM consultant companies and 2KM professors in Iran. They reviewed the questionnaire and suggested some modifications. Based on their validity assessment, PhD students sort out the ambiguity and problems in its contents and design. Their recommends modified the questionnaire due to difficulties for correcting faults “in the field and its wording and format changed” (Zikmund, 2002). The academic matter in the questionnaire was Professor Abdul Razak Ibrahim (Head of department and Deputy Dean) and other professors from a private university who wanted to be anonymous. Their comments were about the construction of the question and ambiguity prevention in order to make it easy to understand by respondents.

Furthermore, confidentiality is a stringent issue in Iranian government firms. For this purpose, the relevant organisational leaders and senior managers reviewed and commented on the questionnaires. The following comments were pointed out; for reviewing the questionnaires.

- Minimize the number of questions to reduce the length of time spent on completing the questionnaire.
- Present the questionnaire in a tabular form for clarity and simplifying respondents’ choices.
- Prepare a detailed glossary of the terms used in the questionnaire.

All experts’ opinions and advices were taken into account in preparing the final draft of the questionnaire.

3.7.10 Sample Size

The selection of reliable and appropriate respondents is imperative for receiving sufficient data in survey studies. In this survey, the respondents are expected to have the appropriate knowledge of the subject areas of the survey (Edwards et al., 2003). This research is interested in inter-firm knowledge collaboration behaviours. Thus, the target respondents are to be familiar with the knowledge management terms and conditions or have a knowledge management background. Thus, they must have experience in knowledge management practices, as well as possessing a general understanding of firm management and, thus, be able to answer the organisational performance and competing values questions. In order to minimize response biases and to help generalise the results of the study, a representative sample, consist of different geographic areas and firm sizes, were chosen. The mailing list was obtained from the relevant ministry and web site of the organisations. The tables in Appendixes C show the categories of the banks, universities and Telecommunications centres.

The criterion considered in choosing institutions was the level of practicing the intensive knowledge management. Knowledge intensive firms' intentions were amplified based on market competitions more than the others to know knowledge management initiatives, possibly the greatest capability and resources to do so, and potentially draw the greatest benefits (Manohar, 2005). In this study, the unit of analysis was organisations, which included banks, universities, and telecommunication centres in Iranian service firms. The organisations were selected from a list of universities from the ministry of science, research and technology, banks from central bank of Iran and ICT from post and telecommunication' ministry of Iran.

To distribute the questionnaire among the target population in knowledge intensive firms, the layer of management was concerned. Regarding this issue, Nonaka and Takeuchi (1995) are the earliest to bring and use the term of "Knowledge Crew". This

means that crew members are responsible for the knowledge management in the organisation. The knowledge crew members consist of three key people in the organisation: the knowledge officers (top or executive managers), the knowledge engineers (middle or functional managers), and the knowledge practitioners (operation or low managers). However, in this research because of unit analysis, which is in organisational level, the study concentrates more on top, middle and low managers.

As mentioned before, the questionnaires were distributed among managers of three different levels in the organisation, top, middle and low. The number of managers in each level is determined by using the organisational chart of that organisation. The number of middle managers in each organisation is mentioned in appendix C. For example, there are 23 banks and financial institution in Tehran. Each of these banks has 4 to 13 supervisor section which means 197 middle managers for banks. Besides, the number of universities in Tehran is 32 with totally 203 middle managers.

Historically, a study by Gold (2001) was established for senior executives in the organisation who could describe the structural elements, in addition to the knowledge-oriented processes. The roles of senior managers in Iranian businesses differ from their western counterparts. Senior managers in Iran are often involved in deciding the future direction of the company, auditing the CEOs decisions, and deciding profit allocations (Kim & Lee, 2003). Moreover, they are aware of the whole organisation's movement and have a clear picture about the organisation. However, some issues such as culture and performance would not be attainable just from the CEO or executive manager. Moreover, the executive managers are often sensitive to revealing their roles and performance in organisational success (Lee & Choi, 2003).

On the other hand, middle managers are more actively involved in working processes and knowledge-oriented activities in the Iranian business environment. Nonaka (1994) pointed out that the middle management was charged with integrating the viewpoints

from both top and lower-level management. Huy (2001) also noted that middle managers significantly contribute to their organisations by their roles as communicators, entrepreneurs, stabilizers, and therapists. Middle managers usually absorb information from the bottom of the organisation and report to the top, as well as hand down the strategic and visionary decisions to the bottom. They play a central role in resolving contradictions between the visionary, abstract concepts of top management, and the experience-grounded concepts from bottom-line personnel, Nonaka (1994).

Moreover, Gold et al (2001), mentioned that "the use of key informants for knowledge management purposes can come from those in the organisation that have access to, and use the organisations knowledge". For this reason, the lower managers were the additional group of target population for this survey. Therefore, in the Iranian case, the top, middle and low managers were selected as the main participants in the study regarding the managers' list of their organisational chart.

In total, the researcher distributed 1200 questionnaires out of which 323 were returned. The objective was to obtain a minimum sample size of the acceptable respondents rate (200-300), which is appropriate for running structural equation modelling (Hair et al., 2006). After data cleaning, 302 were found usable for data analysis.

3.8 Measurement of Research Variables

In order to test the research hypotheses, it is necessary to detail the terms utilised, and how those terms are measured using numerical scales. Three conceptual terms that are needed for the quantitative analysis in this study are competing value, knowledge chain model, and organisational performance. Competing value is the independent variable, the knowledge chain model is the mediating variable, and organisational performance is a dependent variable.

3.8.1 Knowledge Chain Model

Measurement of KCM suggests the use of two main categories (see Holsapple and Singh (2001)), that includes: the primary and secondary activities. Primary activities operationalized their items by Table 3-4 and sub-activities retrieved from more than 130 primary candidate activities clustered by 32 activities cross five primary activities. In this research, the more reliable, applicable and meaningful items were chosen for the respondents in the field of study.

Table 3-4:

Primary activities of the knowledge chain model (KCM)

Knowledge Acquisition	Acquiring knowledge from external sources and making it suitable for subsequent use.
Knowledge Assimilation	Altering the state of an organisation's knowledge resources by distributing and storing acquired, selected, or generated knowledge.
Knowledge Emission	Embedding knowledge into organisational outputs for release into the environment.
Knowledge Generation	Producing knowledge by either discovery or derivation from existing knowledge.
Knowledge Selection	Selecting needed knowledge from internal sources and making it suitable for subsequent use.

Source: Holsapple& Singh (2000).

In order to commence the secondary activities of knowledge chain, this research retrieved secondary activities from a description of the 29 activity types, panning the four secondary activity classes, as Holsapple and Singh (2001). This research examines the items that are more applicable and understandable for respondents.

Table 3-5:

Secondary activities of knowledge chain model (KCM)

Knowledge Leadership	Establishing conditions that enable and facilitate fruitful conduct of KM.
Knowledge Control	Ensuring that needed knowledge processors and resources are available in sufficient quality and quality, subject to security requirements.
Knowledge Coordination	Managing dependencies among KM activities to ensure that proper processes and resources are brought to bear adequately at appropriate times.
Knowledge Measurement.	Assessing values of knowledge resources, knowledge processors, and their deployment

Source: Holsapple& Singh (2000).

3.8.2 Competing Value

A theoretical model of the competing value assessment instrument (CVAI) or "Competing Values Framework" (CVF) was established, developed and validated by Cameron and Freeman (1991). They studied competing values in 334 centres of education institutions, with their work being cited extensively by Cameron and Quinn's (1999) research regarding competing value framework. The proposed framework relates to whether an organisation has a dominant internal or external focus, and whether it strives for flexibility and individuality, or stability and control (O'neill & Quinn, 1993).

In this study, the competing value includes the construction of the competing values' profile of a particular population of firms. Using the second component, a competing value type was drawn through the establishment of the organisation's dominant values, which some scholars adapted as culture type characteristics. The four dominant value types of interest in this study include clan, adhocracy, hierarchy, and market. The CVAI are instruments that permit organisations to diagnose the dominant orientation, based on these core value types. It also allows an organisation to diagnose its values strength, type, and congruence. The validation of CVAI is conducted by measuring the important dimensions of competing values, such as its dominant characteristics (Cameron & Quinn, 1999).

The CVF used competing value types and KM initiatives in this study, consisting of a five-point Likert scale, ranging from 1 (strongly agree) to 5 (strongly disagree), and addresses five questions regarding various components of competing value. Each question presented four alternatives, representing the same quadrant of the framework (Lawson & Samson, 2003).

The research applied a current measure that is primarily designed by Cameron & Quinn (1999) to evaluate competing values. The measure gets four dimensions of competing value -clan or cooperative, adhocracy or entrepreneurial/innovative, hierarchy or compliant, and market or competitive types. The main questionnaire covers 20 elements (5 per culture type) which are divided into four sections and explain various elements of the competing value, e.g. the sample item from clan reads: “This organisation is a very personal place. It is like an extended family. Everyone seems to feel safe sharing his or her personal situations with colleagues”. Respondents were asked to rate the cultural rank of the organisation they live through.

3.8.3 Organisational Performance

Measuring performance is a rather controversial topic. This is due to the fact that each scholar has his/her own perspective regarding performance and measurement performance, based on their respective viewpoint. The multidimensionality characteristic of performance addresses many successful ways in which organisations can operate and achieve their goals. The domain of the argument is as large as the many ways in which organisations operate and interact with their environment.

In this research, the main standpoint for selecting the proper measurements for OP has several implications. The first is how the firm interacts with its competitive environment, while the other is the period needed for the performance to be measured. The next point is which performance measurement would be reliable in the context of knowledge management. The major challenge of measurement performance falls into

three categories; the most important one is the validity of the organisational performance construct. The second challenge is connected to the first one, which is the most appropriate definition of performance that can be afforded to the developed models within a specific research program. The final challenge is the method of performance measurement. This is divided into several stages, dealing with the measures concerned with market versus accounting, financial or non-financial in orientation, and based on the objective or subject criteria.

This discussion moves the operational issue of direct performance measurement into the following section. The modified version of Gupta and Govindarajan (2000) instruments was applied in the study of organisational performance, along with multiple dimensions, rather than one way dimension. Some inappropriate items were omitted from the original list, and new items, such as cost reduction were substituted. The final measure contains 10 performance items, and they are answered based on five point Likert-scale measurement by respondents to extend their business units by making use of these performance measures

Finally, in order to test the hypothesis about the organisational performance, the ten performance measures were considered (Horngren et al, (2010, pp. 890-892) and Waterhouse and Svendsen (1998)).

3.9 Statistical Analysis

In order to determine the relation between competing values, the knowledge chain model and organisational performance, this study used a combination of standard statistical approaches to test the hypotheses based on construct reliability analysis and confirmatory factor analysis.

The Structural equation Model (SEM) tests the model's validity, and is essential in the research method. Checking the unidimensionality of the measure is a compulsory condition in determining construct validity and reliability (Bagozzi & Yi, 1994). When

each indicator is loaded on just one factor and the measured error terms are independent, measurement model is called a unidimensional measurement (Kline et al., 1987). Independency of error term means that they should be as free as possible from the biasing effects of measurement error. Scime (1998) stated the measurement model of all latent variables must be psychometrically sound because of following reasons. The structural position of a full structural equation model signifies the relationships among the hidden variables, and second, the main concern of working with a full model is to access the extent of which the relationships are valid. Hence, testing the validity of the indicator variables has priority over the assessment of the hypothesised structured model.

The best statistical method of signifying relations among sets of observed and hidden variables is factor analysis (Byrne et al., 2011). There are two types of factor analysis: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). In EFA, the researchers are unaware of the behaviour of the variables or their respective reactions. This method is applied when the relations between the observed and latent variables are unknown or uncertain. In contrast, in the CFA, the researcher knows a bit more about the underlying latent variables structure (Kline, 1998).

As a broad guide to analyse and interpret the multivariates, the instructions of the book provided by Hair et al. (2006) were adopted. The instructions offered a framework for the key points to ensure a noteworthy analysis with following basic rules:

- Making the practical, as well as statistical, understanding of the sample size that affects the outcome regarding statistical power for the overall fitting model.
- Concentration on diagnostic techniques by gaining knowledge about the data and dealing with the outliers, missing data and assumption violations
- Avoiding specification errors, such as missing critical predictor variables or including irrelevant variables.

- Looking at errors such as residuals and misclassified observations.
- Proof the test results.

These analysis considerations were combined in the following ways:

The validity of each correlation was carefully examined in order to pinpoint what makes them noticeable. Part of this act is content's validity and its persistence with theory. In addition, relationships, which are expected to exist or be close to being, may be found insignificant. These were considered as a possible measurement limitations, or explanation of direct versus indirect effects. Goodness of fit indices considered carefully in the model, which along with sample size, leads to their significant interpretation. For instance, this study concerned the relationship between the parameter number and the required sample size. Finally, data is screened for skewness, kurtosis, missing data, outliers, as well as reliability confirmation of the constructs.

3.9.1 Personal Background

The demographic questions, applied in this questionnaire, included information such as the organisation's name, and other information about respondents such as age, gender, position, and years of experience. This information establishes whether the samples are over representing a certain group of individuals. There was open-ended question in the end of the questionnaire, which asked the respondent's recommendation and whether they would like to be more involved in this kind of researches. The remaining items were multiple-choice questions. Table 3-6 shows the survey items of general information.

Table 3-6:

General background questions

Please, indicate your gender, M: Male; F: Female.
Estimate the percentage of your time that you have spent working as part of a project team.
How long have you been working for the current company?
How long have you had this job/position?
What is your Employment status? F- Full time, P-part-time, N-non-employed
What is your current (or most recent) job/title?

Source: Author

3.9.2 Structure Equation Model

Structural equation modelling (SEM) "is a multivariate technique that can best be described as a combination of both factor analysis and path analysis. It is a statistical technique that allows the analyst to examine a series of dependence relationships between exogenous variables and endogenous variables simultaneously" (Ho, 2006, p. 281). It is required to clarify the difference between exogenous and endogenous variables before going through the SEM characteristics. Based on Pedhazur and Schmelkin (2013, p. 311), a variable, whose variability is determined by causes outside the causal model under consideration, is called an exogenous variable. The other variable, whose variation is to be explained by exogenous and other endogenous variables in the causal model, is an endogenous variable. In this research, the endogenous and exogenous variables are analysed in three analytical chapters. In the first one, the exogenous and endogenous variables are competing values, knowledge chain activities and organisational performance, respectively. The second one studies the relationship between management and organisational activities in one hand and knowledge chain activities and organisational performance on the other hand. The third

analytical chapter deals with mediation effects of management activities and knowledge chain model.

The first role of SEM is to develop the pattern of interrelated dependencies simultaneously among a set of latent or unobserved constructs, in which each construct is measured by one or more observed variables, (Hair et al., 2006; Schumacker & Lomax, 1996). SEM is established based on causal relationships; where a change in one exogenous variable is supposed to affect the endogenous variable. From one side, SEM is used to analyse latent constructs, especially the causal links, and from the other side, it can be used for other types of analyses, such as variance and covariance estimating, hypothesis testing, confirmatory factor analysis and regression (Jöreskog & Sörbom, 1996).

Using SEM simplifies the unidimensionality of estimations and reliability and validity of the individual construct (Anderson & Gerbing, 1988; Hair et al., 2010; Kline, 2005). Moreover, it offers a test for an overall fit of the model, along with individual parameter evaluation, thus, it supplies the best model fit for the data. In this thesis, SEM, using confirmatory factor analysis, has been conducted.

3.9.3 Two Stages of Structure Equation Model

SEM can be performed as either a one- or two-stage procedure (Hair et al., 2010). In the one-stage procedure, the estimation of measurement and structural models is done concurrently, while in the two-stage procedure, the estimation of the structural model and model modification is done as the next step after estimation of the measurement model. This research applies the two-stage procedure because of three reasons. First, this method is widely used in management studies by different researchers (Carlson et al., 2006; Rhoades et al., 2001; Rynes et al., 2007). Second, the reliability of each construct’s items can be presented more precisely in two-stage method. Finally, it avoids any interaction between the measurement and structural models, Hair et al.

(2011). More precisely, the measurement model should be performed first, because it presents circumstances that must be fulfilled as a matter of logical necessity, and the performance of the measurement model is required while analysing the causal relationships in the structural model (Anderson & Gerbing, 1988).

Therefore, the first stage of analysis deals with specifying the casual relationship between the items (observed variables) and the underlying latent variables (theoretical constructs). In this stage, the unidimensionality of the constructs is verified and their validity is demonstrated. Unidimensionality is defined as “an assumption underlying the calculation of reliability and is demonstrated when the indicators of a construct have an acceptable fit on a single-factor (one dimensional) model” (Hair et al., 2006). As argued by Anderson and Gerbing (1988), the accuracy in testing the convergence and discriminant validity of factors makes unidimensional measurement models more functional. Consequently, the first step in analysing the data focuses on assuring that a single dimension is measured by a set of items (Dunn et al., 1994; Hair et al., 2006). This step (assessing the unidimensionality of measurements) is carried out before testing the reliability and validity of the constructs.

Different methods are available to determine the unidimensionality of the data; the most common methods are exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Based on Anderson and Gerbing (1988), EFA is incapable of assessing unidimensionality directly, however, it aims to validate the factor structure of a scale. Moreover, no explicit test statistic would be provided by EFA which can be applied while assessing convergent and discriminant validity (O'leary-Kelly & J Vokurka, 1998). Therefore, when hypotheses regarding the grounded theoretical models do exist, (Bollen, 1990), confirmatory factor analysis (CFA) is a better method to be used. Consequently, CFA is applied in this study to assess unidimensionality and other properties related to construct validity and reliability. Note that unidimensionality will

be assessed by omitting items with low factor loadings on the hypothesised factors (Dunn et al., 1994). CFA also assists to decide whether the number of factors and loading of measured items supported what the researcher expects theoretically.

In this research, to assess unidimensionality using CFA, a factor loading with a minimum value of 0.33 on a particular factor is regarded as acceptable (Hair et al., 2006; Ho, 2006, p. 207); After attaining undimensionality, the reliability and validity of constructs will be demonstrated in the second step. For this purpose, CFA using maximum likelihood estimate was performed (Anderson & Gerbing, 1988; Kline, 2005). Following this stage and in the structural model, which is considered as the second stage in the SEM, the causal relationships between the underlying theoretical latent constructs were specified. These stages are discussed in more details in the following sections.

3.9.4 Structural Equation Modelling Assumptions

Extension of general linear models results in structural models. Therefore, SEM, as a flexible and powerful statistical method, features a number of assumptions, which should be fulfilled, even approximately, to assure the reliability of results.

One of the most important assumptions is a reasonable sample size, since small sample sizes result in less stable covariance and correlations (Tabachnick et al., 2001). Although the use of sample sizes as small as 50 is suggested by some authors (Anderson & Gerbing, 1988), it is generally believed that the minimum sample size of 100 is required to guarantee appropriateness of maximum likelihood estimation (MLE) (Hair et al., 1995). Some other authors, such as Boomsma (1983), believe that larger sample sizes should be utilized. Based on his suggestion the minimum sample size of 200 is required to estimate SEM parameters using the MLE method.

However, Bentler (1995) suggested that instead of considering the number of participants per measured variables, the researcher should think of the number subjects

per estimated parameters. Thereby, if the effect size estimation is large and the measured variables are normally distributed, the adequate number of subjects per estimated parameters is suggested to be less than ten (Tabachnik & Fidell, 2007). Reviewing the literature and using the results of Monte Carlo simulation studies, Loehlin (1992) concluded that if the model consists of two to four factors, at least 100 cases should be collected and the results would be more reliable if 200 cases are collected. However, a sample of more than 400 is considered inadvisable (Hair et al., 2006), as the sensitivity of methods increase and goodness-of-fit indices demonstrate a poor fit. While there is no agreement regarding sample size, a number of 200 is considered as ideal by (Hair et al., 2006). The sample size of this research is 302, which can be regarded as appropriate for conducting SEM.

Along with the sample size, there are other issues which are important while using SEM. These assumptions include normality of the data, missing data and outliers' effects. These subjects have been discussed under data preparation section (see Section 3.10)

3.9.5 Path Diagram

Path diagram is an easy and convenient way of representing relationships among a number of variables. In SEM, the path diagram is used to present the hypothesized or causal relationships. As can be seen in Figure 3-2, the SEM diagram in this thesis consists of the measured variables (composite variables), and arrows that represent the relationships between the variables. For example, constructs such as competing values consist of clan, market, adhocracy and hierarchy. Competing values, management, organisational activities and organisational performance are presented as ovals (unobserved variables). Measured or composite variables such as coordination, leadership, control, measurement, acquisition, Selection, generation, assimilation and emission are presented as rectangles.

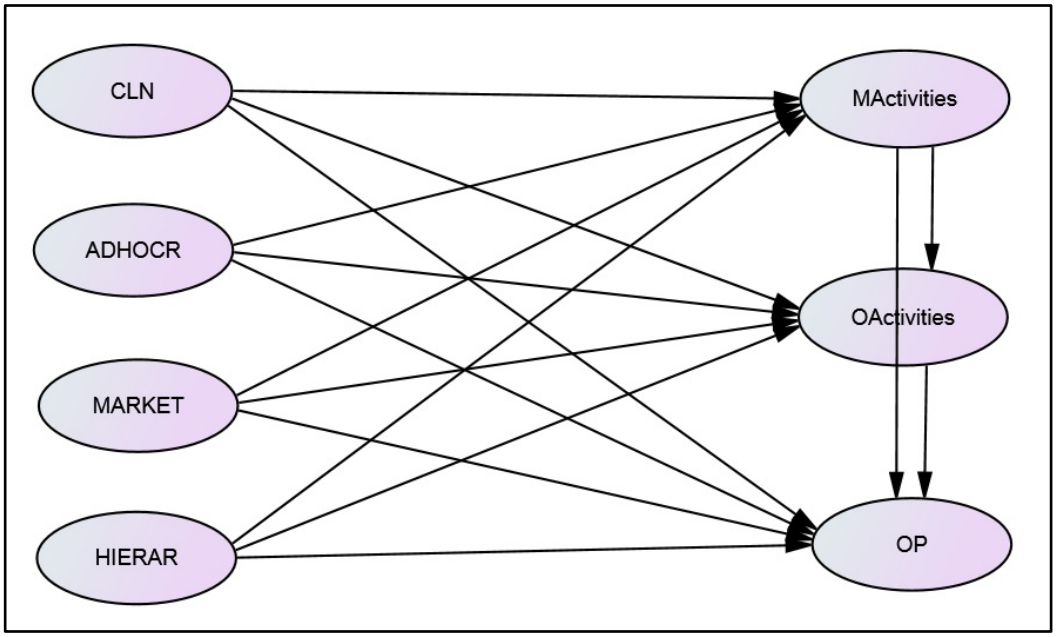

Figure 3-2 : Path diagram of the research

Source: Author

In these diagrams, the connections between variables are presented by two kinds of arrows: causal relationship between two variables is represented by a single-headed, straight arrow, and a simple correlation between the variables is represented by a double-headed, curved arrow. Consequently, variables can be grouped in two classes: variables that do not receive casual inputs from any other variable (exogenous or independent variables) and those that receive one or more casual input (endogenous or dependent variables).

3.9.6 Evaluation the Fit of Model

In SEM, it should be evaluated whether the data fit the hypothesized model or not. For this purpose there is a variety of goodness of fit indices to determine the suitability of the model. As mentioned by Hair et al. (2006, p. 489) “structural equation modelling has no single statistical test that best describes the strength of the model’s prediction.” SEM provides various indices for evaluating the fit of the model; however, scholars do

not agree on which indices are the best and should be reported. For instance, Anderson and Gerbing (1988) proposed that a researcher might discern the adequacy of the specified model for the data with one or more overall goodness-of-fit indices. Kline (2005) suggested applying at least four indices such as NFI, GFI, or NNFI, CFI and SRMR. The goodness of the fit criterion has been developed from three perspectives, which results in three categories of fitting indices: absolute, incremental and parsimonious. As recommended by Bollen and Long (1993); Hair et al. (2006); Holmes-Smith (2002); Jaccard and Wan (1996), the best model fit is provided by considering at least one fitting indices in each of the categories. Each category of fitting indices is studied in the following sections.

3.9.6.1 Absolute Fit Indices

These indices compare observed and expected variances and covariance and, thereby, measure absolute model fit (Jaccard & Wan, 1996). One of the easiest and frequently used indices is the chi-square fit index. To test whether the model fits perfectly to the population, this index compares the empirical variance-covariance matrix (S) with the implied variance-covariance matrix (Σ), which determines the discrepancy between S and Σ. The discrepancy between Σ and S would be small if the P-value (P) is greater than 0.05, which indicates that the actual and estimated values of variance and covariance are not statistically different.

This index can be considered as the most notable indices while evaluating the fit of the model. However, its weak point is its sensitiveness to the sample size (Fornell & Larcker, 1981), (Jöreskog & Sörbom, 1996), particularly when sample sizes are more than 200 (Bagozzi & Yi, 1988; Hair et al., 2006). Thus, it cannot be the only determinant of the evaluation of the overall fit of the model and other indices should be used.

The second absolute fit index considered to be used in this thesis is called the Goodness-of-Fit Index (GFI). This index, which is suggested by Jöreskog and Sörbom (1996), measures the relative amount of variance and covariance explained by the model (Byrne, 2006). The GFI value is computed by comparing the discrepancy value for the considered model in the research and the saturated model, which is regarded as representing a 100% fit. This measure is not adjusted for degrees-of-freedom (Holmes-Smith, 2002) it ranges from 0 (indicating a poor fit) to 1 (indicating a perfect fit), where the minimum value of 0.90 represents the recommended acceptance level, (Kline, 2010, p. 116).

Root Mean Square Error of Approximation (RMSEA) is considered as the third measure of absolute fit index in this research. The inadequacy of the specified model is measured by the error of approximation and RMSEA indicates the average value of inadequacy of the fitted model per degree of freedom. While Holmes-Smith (2002) recommends maximum value of 0.05 for RMSEA, Byrne (2006) considered the value up to 1.0 as reasonable. However, the RMSEA values ranging from 0.05 to 0.08 are considered acceptable by the majority of researchers (Hair et al., 2006)..

3.9.6.2 Incremental Fit Indices

Incremental fit indices are the second groups of fitting indices considered in this research. Comparative Fit Index (CFI), Adjusted Goodness-of-Fit Index (AGFI), the Normal Fit Index (NFI), the Incremental Fit Index (IFI) and Tacker and Lewis index (TLI) are among the most widely used incremental fit indices, which contrast the absolute fit of the research model with a baseline model. For instance, Adjusted Goodness-of-Fit Index (AGFI) is a modification of GFI, which is adjusted for degrees-of-freedom (Hair et al., 2006; Holmes-Smith, 2002; Marsh et al., 1988). This index ranges from 0 (indicating a poor fit) to 1 (indicating perfect fit) and the values above 0.9 are considered as acceptable (Hair et al., 2010). Normed Fit Index (NFI) is the other

incremental fit index, which is applied by different researchers (Byrne, 2006; Hair et al., 2006). This index reflects the proportion of fit of the target model compared to the baseline model. However, this index does not perform well with small sample sizes, and tends to be underestimated when the data are not normally distributed. Revising this index, and taking into account the sample size, results in the Comparative Fit Index (CFI) (Bentler & Bonett, 1980). CFI contrasts the predicted and observed covariance matrices of the model. NFI and CFI, both, range from 0 (poor fit) to 1 (perfect fit), and values less than 0.90, indicating an unacceptable fit (Hair et al., 2006; Kline, 2010, p. 116). TLI, which is also considered as the Non-Normed Fit Index (NNFI), is the result of the NFI adjustment for the degrees of freedom in the model. This index is a combination of a parsimonious and a comparative fitting index between the hypothesized and baseline models. Although the value of this index ranges from 0 (not fit at all) to 1 (perfect fit), the commonly recommended level is over 0.90 (Hair et al., 2006).

3.9.6.3 Parsimonious Fit Indices

Parsimonious fit indices study the parsimony of the hypothesised model by assessing the fit of the model to the number of estimated coefficients required to attain the level of the fit (Hair et al., 2006). Among different indices in this category, the most common fitting index is the normed chi-square (NC Ratio=χ^2/df), which is applied while assessing the appropriateness of the model for the data (Hair et al., 2010). Various acceptable values are suggested by different authors; Tabachnik and Fidell (2007) considered the maximum value of 2 as acceptable while Mciver and Carmines (1981) stepped this value up to 3.0 and Wheaton (1987) maximise this value to 5.0. Chi square index, as the primary component of this measure, is sensitive to changes in the sample size. This sensitivity, which is conveyed into normed chi-square, makes this index

appropriate as an indicator of the overall fit of the model (in conjunction with other measures). Note that it cannot be used as a basis for rejecting or accepting the model.

3.9.6.4 Evaluating the CFA and EFA

The main objective of factor analysis is data reduction, the main purpose of which is evaluating scale items and deducing the number of related variables to a more manageable number. Two of the most commonly used methods in factor analysis are exploratory and confirmatory factor analysis.

The primary aim of the exploratory factor analysis (EFA) is determining the minimum number of interpretable factors that can expound the correlations among variables adequately. It is presumed that items, sorted together by EFA, measure the same construct. (Kerlinger, 1986). Besides, it is notable that these constructs should be interpretable theoretically and the resulted model should fit the data properly. This method will be beneficial when the researcher wants to determine the dimensionality of a set of variables or identify variables that are not representative of the considered dimensions. Therefore, using EFA, data analysis will proceed to find out how and to what extent the observed variables and the underlying constructs are linked together.

When the researcher has some information about the structure of the latent variables, confirmatory factor analysis (CFA) is applied. In this method based on the researcher's knowledge, which comes from theory, empirical research, or both, the relation between observed variables and related constructs is postulated, and then the resulted structure model is hypothesized statistically. Having made the assertion in advance of which items belong to which factor, the researcher can test this assertion by examining factor loadings. While describing the difference between the two approaches is relatively simple, it is worth pointing out that in practice, the distinction is not that clear.

The objective of confirmatory factor analysis is hypothesis testing, and the research hypothesis is that a number of items or variables are collectively related. The research

runs a factor analysis on the data to test whether the relationships exist as hypothesised. Thus, CFA focuses entirely on how and to what extent the observed variables and their related latent factors are linked. This linkage, which is studied in the framework of SEM, represents which is called a measurement model.

Therefore, in this study, CFA is used while studying the measurement model in AMOS notations. Along with presenting the variables and related labels on the path diagrams, they are summarised in Tables. CFA is going to validate each individual measurement model for convergent reality, regression coefficient (factor loading), error variances, and the factor covariance. The threshold values for test statistics are presented in the relevant section.

3.9.6.5 Confirmatory Factor Analysis (CFA) on CV and KCM

The factor analysis provided by AMOS with the specified search technique was employed on the whole 14-dimensions of the multilevel-multidimensional measurement model; illustrated in this chapter. This multilevel-multidimensional measurement model comprises of four-indicator and nine-indicator sub-models with the following constructs: competing value (with clan, adhocracy, hierarchy and market), knowledge chain (with leadership, coordination, control, measurement, acquisition, selection, generation, assimilation, emission) and organisational performance.

Obtaining guidance on what are the essential subsets of single-headed arrows in the model are the main goal of the specification search. It would also be helpful while determining the most optimum combination of items and accessing the reliability and validity of the multi-item measures in the model (Lomax & Schumacker, 2012). Estimating a collection of indicators (four-indicator, nine-indicator), which includes two-sub measurement, management and organisational activities, along with an indicator for organisational performance models for unidimensionality, results in the identified model shown in following chapters.

The internal reliability and consistency of the model constructs is substantially illustrated with tables showing Cronbach alphas. The other table presents the standardised regression weights, the standard error (S.E.) and critical ratio (C.R.) values of the various indicator variables. The S.E. of an estimated coefficient is an index which shows the 'efficiency' of the related exogenous (independent or observed) variable; i.e., smaller values of the S.E. lead to more efficient exogenous variables. The significance of the regression coefficient is tested by C.R., which is calculated by dividing the parameter estimates by their respective standard errors. C.R. is approximately distributed as standardized normal distribution, Z.

3.9.7 Hypothesis Testing

Hair et al. (2011, p. 5) broadly described multivariate analysis by referring to all statistical methods of analysis which simultaneously examine the multiple measurements on each individual or object under investigation. The applications of confirmatory factor analysis (CFA), as one of the methods in multivariate analysis, are discussed below. In this study, an investigation of the 14 dimensional scales was firstly executed using CFA available in AMOS, as discussed in the next section. The items for each dimensional scale were subjected to scale elaboration, based upon a testing of model fits. In this study, CFA is applied using ML estimation and all the data are treated as continuous for the following points. Taking a close look at SEM application in researches conducted in the last 15 years revealed that Likert-type scaled data is the most common data type. Moreover, in these researches parameters are mostly estimated using ML estimation method (Cohen, 2003). ML is an appropriate estimation, as it analyses covariance instead of the connection matrix since the latter can yield inappropriate standard error estimates (Joreskog & Sorbom, 1996). When the categorical variables are significant in number, it is possible to neglect the methods' failure in addressing the cordiality of the data in ML appraisal (Bentler & Chou, 1987).

Chin (1995) argued that variables with four or more categories can be treated as normally distributed variables with little concern.

To test the considered hypothesis in the framework, the AMOS output provides the standardised regression weights, critical rations (C.R.), P-values and Fitting indices. The value of these criteria helps to interpret whether a hypothesis test is accepted or rejected. In fact, if the P-value is at most 0.05 or, equivalently, C.R. is above 1.96 in the absolute value, it would be assumed that the considered relationship is significant. Fitting indices show the model fits the data well (section 3.9.6).

Besides, AMOS software has the capability of testing the mediating role of some constructs on the relation between independent (exogenous) and the dependent (endogenous) variables. For this purpose, the researcher needs to define direct, indirect and mediate models, and then, considering fitting indices and standardised regression weights, decides which model fits the data best. In what follows, the decision process based on significance of path coefficients is explained.

3.9.7.1 Mediators

Sometimes, when studying the relationships between variables, it is considered that a random variable, called M, affects the relation between an independent random variable X and a dependent random variable Y. Based on Baron and Kenny (1986), M is called a mediator (mediating random variable) if it meets the following conditions:

- The effect of X on M is significant (i.e., B_{XM} is statistically significant).
- M significantly affects Y (i.e., B_{MY} is statistically significant) “
- X affects Y through M. The mediating effect of M will be more significant when $B_{XY}=0$.

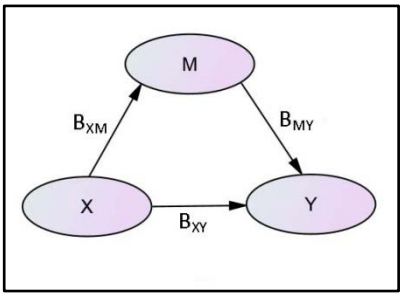

Figure 3-3: Mediating effect

Source: Author

The following diagram shows the direct, indirect and mediation effects by studying the significance of the relationship between variables.

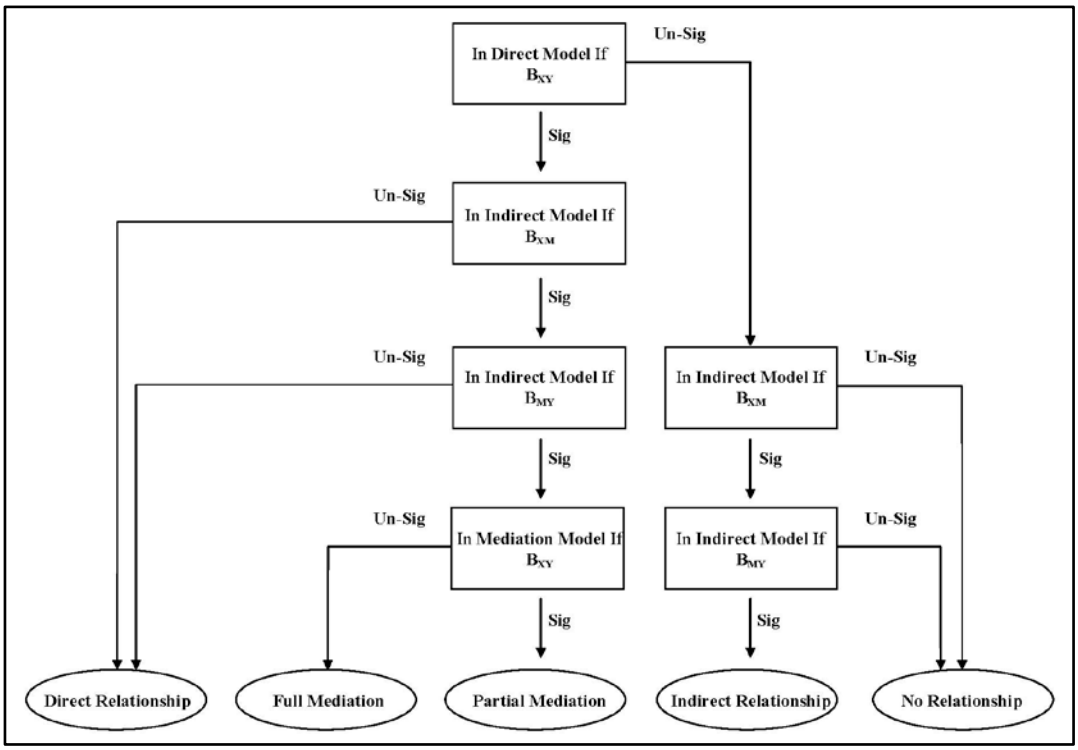

Figure 3-4 : Mediating effects

Source: Author

In order to establish mediation, the significance of B_{XM}, B_{MY} and B_{XY} must be scrutinised. It is asserted by Baron and Kenny (1986) that if the indirect effect is significant and there is no direct effect, the evidence for mediation is strongest and it is

called “full mediation”. The mediation type is called “partial” If both indirect and direct effects are significant. The full mediation in any research is regarded as the gold standard; however, most of the times, conducting and reporting the tests’ results properly lead to the partial mediation, Iacobucci (2008).

Zhao et al. (2010) criticised the viewpoint of Baron on two points. Baron and Kenny (1986) detail the strength of mediation when there is just an indirect effect. In fact, the Sobel test, which they have presented, is just concerned with the indirect path, which is shown in graph 3-3 (B_{XM}-B_{MY}). However, “the strength of mediation should be measured by the size of the indirect effect, not by the lack of the direct effect”. In fact, the researcher can be informed about different mediation types when the direct effect exists. Moreover, sometimes a researcher expected a positive indirect effect, B_{XM}- B_{MY}, however, he confronted a significant and negative indirect effect, despite positive correlations between X and Y, X and M, and Y and M.

Generally, when studying mediation, direct effects are not hypothesised and, where B_{XM}-B_{MY} and B_{YX} are both significant, they are reported directly in the results section and as evidence for “partial mediation”. The significant direct path between X and Y is just “unexplained” part of their relationship. Despite usually being an artefact of error in measuring M, it is asserted that significant “direct” paths are generally a result of the mediators’ omission from the model (Shrout & Bolger, 2002).

As seen in Figure 3-4, the effect of X on Y can be classified into four groups: direct effect, mediate effect (full and Partial), indirect effect, or no relation. Along with this categorisation, when the mediation (B_{XM}-B_{MY}) and direct (B_{XY}) effects exist, the sign of effects can be considered in classifying the partial mediation effect into two classes; complementary and competitive mediation (Zhao et al., 2010). When the mediation (B_{XM}-B_{MY}) and direct (B_{XY}) effects exist and both of them point at the same direction it

is called complementary mediation. On the other hand, if the mediation and the direct effects point in opposite directions, it is called competitive mediation (Figure 3.5).

Competitive and complementary mediations, as two different forms of partial mediation effect, are equally likely to happen and both are of theoretical interest. These cases imply the existence of indirect effect and the existence of an unexplained direct effect in the model, which makes future research necessary to look for alternative mediators that match the sign of the revealed direct effect.

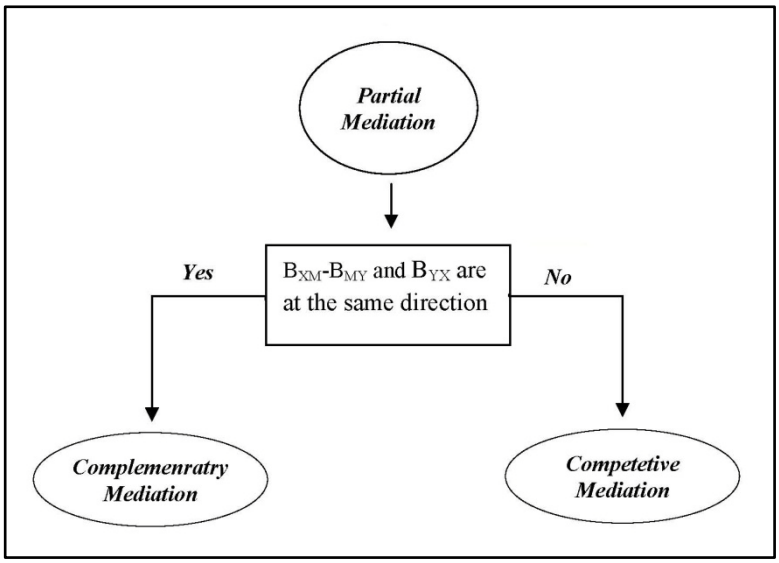

Figure 3-5 : Partial mediation

Source: Author

3.9.8 Reliability and Validity

After assessing the unidimensionality of the measurement model, the reliability and validity of constructs should be evaluated (Anderson & Gerbing, 1988; Dunn et al., 1994). Despite being different, these two concepts are closely related (Bollen, 1990). In fact, an instrument that measures what it is supposed to be called valid and an instrument that is consistent and stable is called reliable (Sekaran, 2007). It is obvious that a measure may be reliable (consistent) and, at the same time, invalid (inaccurate),

and vice versa, a measure may be valid but unreliable (Holmes-Smith, 2002). Therefore, to assure the quality of the findings and conclusions, the researcher assesses some of the reliability and validity measurements. This thesis employs Cronbach's (1951) coefficient alpha, Construct reliability (CR), and Average Variance Extracted (AVE) as reliability, and content, construct, criterion and external validity as validity measurements. In the following two sections these measurements are studied in more details.

3.9.8.1 Reliability

Reliability is defined as "the degree to which measures are free from random error and therefore yield consistent results" (Zikmund, 2002). That means that reliability is concerned with whether the research results can be replicated by another researcher using similar methods. Reliability and error are related indirectly, and larger values of reliability come along with smaller error values (Punch, 1998). Therefore, reliability is mainly concerned with minimising errors and biases in a research (Yin, 1994).

Two main dimensions are utilised while assessing reliability, repeatability and internal consistency (Zikmund, 2002). Repeatability, the first dimension, can be examined using test-retest and alternatives, as two possible methods. Test-retest is concerned with the consistency between responses from an individual at two different points of time and under equivalent conditions. The idea is that in case the measurements are reliable, the respondent should not alter the answers greatly across periods of time. For this purpose, the degree of resemblance between the sets of responses is confirmed using the correlation coefficient. However, as pointed out by Kinnear Thomas and Taylor (1996), (Malhotra & Peterson, 2001; Zikmund, 2002), this method suffers from two drawbacks which make it unsuitable for this research. First, while conducting the second test, respondents may alter their viewpoints based on what they have learned from the first one. In other words, the respondent's answers in the

subsequent tests may change under the influence of the initial test. Second, the respondents' attitude may change over time. In fact, as the time gap between the tests increases, the reliability of the results decreases.

The alternative-form method "is used when two alternative instruments are designed to be as equivalent as possible" (Zikmund, 2002, p. 331). That is, the respondents are given a set of two forms. The forms are considered equivalent but not identical. The results obtained on the basis of these forms are compared to confirm whether there is a significant difference between the two forms. The high correlation between the two forms coveys the idea of reliability (Zikmund, 2002). However, despite being time and cost consuming, constructing two equivalent forms of an instrument is always difficult in all cases.

Since the above mentioned methods are not without shortcomings, the internal consistency is considered as appropriate. Internal consistency is "used to assess the reliability of summated scale where several items are summed to form of total score" (Malhotra, 2008, p. 305). In case of being reliable, the items will demonstrate consistency in the indication of the concept which is being measured. Cronbach's (1951) coefficient alpha is the measure mostly used to report internal consistency (Sekaran, 2007). This technique is used to estimate the degree of representativeness of the items in the scale about the domain of the measured constructs. Being considered as 'absolutely the first measure' being utilised for assessing the reliability of a measurement scale, Cronbach's alpha measures the internal consistency of a set of items. Moreover, it is applied to evaluate the reliability of the measures because it is an instrumental coefficient in measuring multi-point scale items (Sekaran, 2007).

Various levels of acceptance are suggested by different authors while assessing reliability of constructs. For instance, although Nunnally and Bernstein (1994) advocated the acceptance level of 0.50 to 0.60 for Cronbach's alpha, he boosted it in

1978 and considered the minimum value of 0.70 as an acceptable level of internal consistency. A rule of thumb suggested by Vacha-Haase et al. (2002) set the recommended level of Cronbach's alpha higher than 0.70, and educed this value as low as 0.60 for new scales. Besides, the minimum value of 0.80 is indicated by some authors such as Carmines and Zeller (1979) to establish internal consistency. Despite various levels of acceptance have been recommended, the minimum value of 0.70 is generally accepted by researchers. Consequently, this thesis applies this cutoff value (0.70) as the minimum point of Cronbach's alpha coefficient for identifying scales' internal consistency.

To test the stability of the factor structure in scale construction, CFA approach is used in this thesis. Furthermore, to make sure that all measures in the research are reliable, CFA will be used to assess reliability. This method makes the researcher confident of the consistency of the individual items in their measurements (Hair et al., 2010). Internal consistency, as another estimation of reliability, was evaluated by two indices: Construct Reliability (CR) and Average Variance Extracted (AVE). Instead of dealing with the reliability of a single variable, CR is concerned with the internal consistency of a set of measures to capture the degree where a set of measures indicates the common latent construct (Holmes-Smith, 2002). In this research, CR is calculated based on estimation of parameters in the model, which makes this criterion widely applicable. Moreover, the AVE assessment is a more accurate indicator in the set of measures to compare with construct reliability. Therefore, the AVE shows the overall variance in the items applied by the latent construct. Since CR and AVE are not computed directly by AMOS software, in this research, these criteria have been computed for multiple item constructs separately (Hair et al., 2006). The two widely acceptable thresholds for CR and AVE, which are applied in this study, are suggested

by Bagozzi and Yi (1988). Based on their recommendation the minimum value of CR and AVE are set as 0.60 and 0.50, respectively.

This thesis applies Cronbach's alpha, CR, and AVE to make sure about the sufficiency of the specified items in representing the underlying constructs. The results concerned with these assessments are notified in the following sections.

3.9.8.2 Validity

Reliability on its own is insufficient to be considered as an adequate instrument (Anderson & Gerbing, 1988; Hair et al., 2006). Therefore, the validity of constructs should be confirmed. Hair et al. (2010) mentioned that "Validity is the degree to which a measure accurately represents what it is supposed to". It is pointed out by Neuman and Kreuger (2003) that better fit between the conceptual and operational definitions leads to the greater validity measurement value. Moreover, the relation between a construct and its indicators are presented using validity (Punch, 2005).

Nunnally and Bernstein (1991) imply that validity of constructs has three significant aspects. First, a construct should be a good representative of the domain related to the construct. Secondly, the construct should be representative of the alternative measures. Finally, the construct should be well related to other constructs of interest. These aspects and considerations result in two types of validity; content and construct validity and the latter, in itself, is divided into convergent and discriminant validity. These criteria have been discussed in the following.

Content validity refers to the degree at which an assessment measures what it is supposed to measure, based on the appropriateness of its content. Brandt (2005) defines content validity as "the comprehensiveness of an assessment and its inclusion of items that fully represented the attribute being measured." Although being subjective, content validity is a systematic evaluation of the extent a scale measures a construct (Malhotra, 2008). In this research, content validity is obtained following the procedure

recommended by Cooper and Schindler (2003). They suggest that, to obtain validity, the researcher should discern the existing scales from the literature, conducting interviews with a panel of experts in that field of study (including practitioners from industries and academics) and asking them to state their comments. Interview is a one of the pre-test methods, introduced before. Therefore, content validity is verified before carrying out the final survey a precursor to other validity measurements.

The extent to which the constructs that are of theoretical interest in a research are triumphantly operationalised is called construct validity. This definition has two aspects; first, it covers the extent to which the constructs are reliably measured, and second it identifies whether the considered measures capture the construct of interest (Abernathy et al., 1999). Construct validity aims to ensure that the research applies appropriate tools and techniques for it to effectively investigate the research questions. Even though evaluating reliability and content validity evolves an 'internally consistent' set of measurement items, it is inadequate for construct validity (Nunnally, 1959). Therefore, both convergent and discriminant validities are analysed to examine construct validity. Convergent validity is concerned with the correlation between measures of a construct and discriminant validity deals with the correlation between measures of different constructs (Sekaran, 2007).

Methods, such as correlation, factor analysis and even CFA in SEM, have been recommended for evaluating convergent and discriminant validity. In this research, CFA is applied for assessing convergent and discriminant validity. Convergent validity is illustrated by the extent of which the direct relation between an item and its respective factor (or latent variable) is different from zero and statistically significant (Hair et al., 2006). More precisely, the factor loading of final items (excluding deleted items) on one factor (Anderson & Gerbing, 1988) should be 0.33 or greater (Ho, 2006, p. 207). The

researcher can also utilize AVE as a supportive indicator of convergent validity (Fornell & Larcker, 1981).

This thesis also employs two methods to assess discriminant validity. The first method, which is based on the estimated correlation between factors, indicates that these correlations should not exceed the recommended level of 0.90 in absolute value (Kline, 2010, p. 116). This method agrees with the definition of discriminant validity. That is, in case of high correlation between two factors, items with low discriminant validity are omitted (Kline, 2005). The second method of evaluation of the discriminant validity is using pattern structure coefficients (or standardized factor loadings) to decide about empirical distinguishability of factors in the measurement model. Along with convergent and discriminant validities which impose restrictions, construct validity is applied in this research. This criterion, which is discussed later, assures adequacy of the model fit via goodness-of-fit results obtained from CFA (Hsieh & Hiang, 2004).

The third measure of validity discussed in this research is criterion validity, which refers to the ability of measures to correlate with other standard measures of the same construct (Zikmund, 2003). These cases involve the concurrent validity and predictive validity (Sekaran, 2007). They differ only with respect to time. The former, for example, is established when a new measure is taken at the same time as a criterion, and is shown to be valid, while the latter is established when a new measure predicts a future event. Although, in earlier studies, criterion validity was commonly used, increasing use of construct validity has dissolved its popularity. Besides, being synonymous with convergent validity, this measurement of validity can be used instead of criterion validity (Zikmund, 2003). This research applies convergent validity, which leads to criterion validity, as well.

External validity is the last validity criterion used in this research. The validity measurements discussed above are concerned with the internal validity of the scales and

their respective items, however, external validity deals with the extent that the findings of a study can be generalised to other groups or subjects. More accurately, external validity refers to representativeness or generalisability of the research results. Hence, the external validity of this thesis was confirmed by the representative sample, employed by the researcher, and using a real-world setting (Leedy, 2001; Zikmund, 2003).

In summary, the researcher should evaluate the validity of the constructs before testing the desired hypotheses. This step is considered as important since the validity of constructs leads to conclusions that can be useful while generalizing the results. Therefore, different forms of validity introduced above were.

The methodologies applied while collecting the data and the research methodology for this study were described in the previous sections of this chapter. The purpose of the following sections is to present steps required while preparing data for analysis.

3.10 Data Preparation

Preparation of data includes checking and entering the data into the computer by data coding and screening, dealing with missing data and checking the data for accuracy by normality assessment and response rate.

3.10.1 Data Coding

Data collection from the field of study is followed by data editing, which is taken on to make sure that the data is complete and consistent. Based on Sekaran (Sekaran, 2007), this study consists of all respondents who answered more than 75% of questions, and the respondents with at least 25% unanswered questions are omitted from this study (i.e. 21 surveys were omitted). Based on Kinnear Thomas (1996), missing values, which are discussed below, are any missing data.

Coding means assigning numbers to questionnaire answers (Malhotra, 2008), and transferring data from questionnaires to SPSS. Data coding can be carried out before or

after answering the questionnaires by respondents, called pre-coding or post-coding, respectively (De Vaus, 1995). Here, a data file is established in SPSS to perform coding procedures and the questionnaire answers are pre-coded with numeric values (see questionnaire in Appendix B). After entering data into the data file, the editing procedure commences. In this case, any error in data entry would be detected, and out-of-range values in the data file were adjusted by referring to the original questionnaire.

3.10.2 Data Screening

Data screening has been set in order to conduct a check-up of the basic descriptive statistics or frequency distributions. Simply, missing values and data that are out of range were detected using checking and screening. In order to screen the raw data before going through analysing, issues such as accuracy of input, missing observations and outliers and distribution issues such as normality (Hair, 1998; Tabachnick et al., 2001) are properly identified.

The screening of collected data in SPSS demonstrates that just three questions about financial performance had more than 5% missing data (see Appendix A). Because less than 5% missing data is acceptable for the variables (Churchill & Gilbert 1979), it was not necessary to assess the pattern of missing data and these questions were excluded. Nevertheless, to find out that there was no systematic error in this analysis, the randomness of missing data was applied (Hair, 1998). Using SPSS, the existence of a pattern in missing data is examined and the results revealed just a random occurrence (see Appendix A). Based on Tabachnick and Fidell (2001) the data were ready for further analysis and there is no problem with the data.

3.10.3 The Accuracy of the Data File

In this section, maintenance of respondent confidentiality and methods of reducing errors is reported. In order to maintain confidentiality, the preliminary interview in order to get familiar with the case of study and the purpose of the research conducted.

Therefore, the questionnaires were distributed and substantially collected. The researcher provided an appropriate instruction and training for respondents in order to minimize errors during the survey. The high response rate is another issue which is concerned by the researcher. For this purpose, the researcher encouraged the respondents to complete the questionnaire as soon as possible and send them back via mail. Queries, raised upon distribution of the questionnaires were immediately tackled through e-mail, fax or telephone. The researcher checked the received questionnaires for completeness and readability and missing data were identified. In some cases there was need to follow up and calls were made to some respondents for clarification.

In order to find out how much the date is accurate, the researcher looked through the row data and found out there was some missing data and they need to proofread versus the original data. In this way, the data has been checked by someone else to check that items have been entered correctly.

3.10.4 Treatment of Missing Data

It is unusual to retrieve at a set with no missing data (Coakes & Steed, 2009; Hair et al., 2006). Missing data normally occurs as a result of, a respondent neglects or inability to answer one or more questions of the questionnaire. The study follows the recommend action by Tabachnick (2001) to estimate the degree of missing data. As it is recommended the data were evaluated for the amount and the nature (pattern) of missing data. Although Tabachnick and Fidell indicated that evaluating the pattern of missing data is essential, the amount of missing data is still of great importance. This is because checking the pattern of missing data has an advantage in determining whether missing data occur randomly or the occurrence is related to specific items. It means that the pattern of missing data would be randomly disseminated among the questionnaires. Nevertheless, the missing data lead to biased estimates of results (Tabachnick et al., 2001).

In order to use missing data in our research, we try to figure out whether the data is missing randomly or based on some reason. In this way, for this research there was no pattern of missing data discovered by looking at data run. Therefore, the following steps have taken.

Several ways have been reported for replacing the missing values. One way is replacing value number by prior knowledge from an educated guess. Although, it is easy to perform, it may increase the bias and hence was not adapted in this study. The next option would be replacing the missing values by the group mean. This research did not follow this option because each has a different mean value in application; therefore, allocation group mean to all missing values may cause bias in the analysis.

The last method would be replacing the missing values by variable mean. There were three variables with more than 5% missing and, in the rest of the variables, missing data were distributed randomly. In this study missing values replaced in each variable with the mean of the variable response. This method was viewed as an appropriate action for the following two reasons. First, it is one of the most frequently used methods, since it considers the mean of valid response the best substitution of missing data (Hair et al., 2006) Second, when variables are sorted in factors, the sample size will reduce enormously if the variables with missing values are deleted list-wise (Tabachnick et al., 2001).

It was essential to examine that the mean and the distribution of variables do not change after replacement of missing values with the variable mean. Therefore, a paired sample t-test was carried out to test whether the mean of the original and adjusted variables are different or not (see Appendix A). To test the equi-distributedness of the original and adjusted variables, a Wilcoxon signed-rank test was conducted (see Appendix A). The results indicate that mean replacement has no significant effects on overall mean and distribution of variables.

3.10.5 Assessment of the Normality

After substituting missing data with mean value of the respective variable, as suggested by Coakes and Steed (2009), the researcher inspects normality of the distribution of the scale data. This stage is necessary since a prerequisite assumption for both factor analysis and structural equation modelling is the normality of the distribution of the data, and consequently, the distribution of variables used in the analysis must be checked (Kline, 2010).

While inspecting the distribution of variables, the first step is utilization of the Box and Whisker and steam and leaf plots to check for outliers. Outliers are "observations with a unique combination of characteristics identifiable as distinctly different from the other observations" (Hair et al., 2010, p. 64). More precisely, the outliers are extreme values, with very low or very high scores. Such data imposes non-normality to the data and results in distorted statistics (Tabachnick et al., 2001). If the outliers present less than 5% of the data, Tabachnick et al. (2001) method of scores changing will be applied and the extreme values were altered to their closest values (up or down).

There are a number of methods for changing actual deviation from normality that can be used purposefully. One of these common methods is to utilise skewness and kurtosis (appendix A). Based on these methods, the distribution of observations will be normal if the value of skewness and kurtosis are not significantly large. If the sample size is large enough (more than 200) (Hair et al., 2006), small deviations from normality can be significant, though not substantive. Tabachnick et al. (2001, p. 74) believe that, "in a large sample, a variable with significant skewness and kurtosis often does not deviate enough from normality to make a substantive difference in the analysis". Although being applicable for small sample sizes, verification the absolute value of skewness and kurtosis is inescapable. A rule of thumb suggests that the absolute values of skewness and kurtosis should not be greater than three and two, respectively (Kline, 2010). Using

SPSS, it is shown that the absolute value of skewness and kurtosis are both in the mentioned levels, which suggest that the data are normally distributed.

Although review of skewness and kurtosis values is essential, normal probability plot is considered as a graphical technique for assessing normality when the sample size is large (Hair et al., 2006). The data (points) cluster around an approximately straight line, which indicates that the data is not significantly different from normal distribution. The normality of the observations makes any adjustment unnecessary (Tabachnick et al., 2001)..

3.10.6 Response Rate

As mentioned in the methodology, the data are collected from service sector of Iranian industries, educational, financial and telecommunications. The survey started in October 2010 and was accomplished by July 2011. A total of 58 organisations participated in this survey. In order to have samples of representative service industries, respondents from a cross-section of financial, educational and telecommunication firms in Iran were sought. A total of 323 questionnaires which is around 26.9% of distributed questionnaires returned for analysis. Throughout the screening process these questionnaires, 21 (6.5%) out of the respondents had incomplete answers. In this case, they were discarded for avoiding missing data problems in the SEM computation. This process is recognised as list wise deletion (Lomax & Schumacker, 2012), which was preferred to other methods of dealing with questionnaires with great amount of missing responses, such as imputation or pair-wise deletion. The main reason for such deletions is that it changes the raw data in some arbitrary way to retain the case. For instance, appointing missing values with an estimated mean has the advantage of simplicity, and on the other hand, it is not sensitive to respondent's scores pattern (Lomax & Schumacker, 2012).

From a total of 1200 distributed questionnaires, 323 were returned and 21 questionnaires had more than 25% unanswered items. Therefore, the number of effective sample in this research is 302 (25.2%) usable questionnaires.

3.11 Descriptive Analysis

This part should modify with new figures and numbers. Varieties of variables have been applied to clarify the sample character. The outcomes demonstrated in Table 3-7 reveal alterations in the demographic characteristics of the respondents which include gender, age, ethnicity, educational qualification, etc.

The analysis of the final sample profile showed that the number of male respondents (225) is higher than the number of females (77), representing a ratio of 74.5% and 25.5%, respectively. The mean age of the respondents was 34.1 years. Regarding job title, Table 3-7 shows that the largest percentage belongs to the functional or middle managers (%52). The smaller percentages were for executive and operational managers (17.9%, 30.1%, respectively). Most of the participants are full time (93%) and with respect to ethnicity, they are mostly Fars, Tork and Kord (78.1%, 10.3% and 8.9% respectively). The participants in this research were mostly from the financial services sector such as banks 34.4%, telecommunications 29.1% and 36.42% were from and educational institution and universities.

Table 3-7 :

Demographics

Demographic Profile	Number of Respondents (N=302)	Valid Percentage (%)
Gender		
Male	225	74.5
Female	77	25.5
Age		
<26	30	9.9
26-35	167	55.3
36-45	81	26.8
46-55	18	6.0
>55	6	2.0
Ethnic Background		
Fars	236	78.1
Tork	31	10.3
Kord	27	8.9
Lor	6	2.0
Gilak	2	0.7
Current Job/Title		
Executive (Top) Managers	54	17.9
Functional (Middle) Managers	157	52
Operational (Low) Managers	91	30.1
Employment Status		
Full Time	281	93
Part Time	21	7
Type of the company		
Education /University	110	36.4
Tele Communications	88	29.1
Financial Services/Banking	104	34.4
How long have you had this job/position?		
Less Than 5 Years	171	56.6
5-10 Years	81	26.8
11-20 Years	43	14.2
More Than 20 Years	7	2.3

Source: Author

Table 3-8 presents the information about the job experience of those who attend in the sample. In terms of working experience, 40.1% of the respondents work for the current company for less than 5 years. Those with 5 to 10 and 11 to 20 years of working experience in their current company constitute 41.4% and 16.2% of respondents, respectively. Although, 9.9% of the respondents do not mention the ownership status of the company they work for, it is clear that they mostly work for public and private companies (62.9% and 21.5% respectively). Other companies form only 5.6% of respondents.

Table 3-8:

Job experiences

Demographic Profile	Number of Respondents (N=302)	Valid Percentage (%)
How long have you been working for current company?		
Less Than 5 Years	121	40.1
5-10 Years	125	41.4
11-20 Years	49	16.2
More Than 20 Years	7	2.3
The number of full time employees		
Less Than 150	196	64.9
150-500	29	9.6
501-1000	17	5.6
1001-2000	24	7.9
More Than 2001	36	12
Ownership Status		
Private companies	65	21.5
Public companies	190	62.9
Multinationals	3	1.0
Joint-venture companies	14	4.6
etc.	30	9.9

Source: Author

3.12 Analysis and Results of Measurement Models

As mentioned in previous sections, structural equation modelling (SEM) is applied to test the hypotheses originating from the theoretical model. Anderson and Gerbing (1988) recommend conducting the SEM analysis as a two-stage procedure, which is also adopted in this research. The rationale of usage of this approach is as discussed in section 3.9. The first stage leads to measurement model. This stage is conducted to establish causal relationships between the observed variables and the fundamental theoretical constructs. In this way, AMOS 20 was run to reach the confirmatory factor analysis. In the next stage, the analysis continued by causal relationships or the paths between different variables such as the underlying exogenous variable consisting of competing values and endogenous constructs include knowledge chain activities and organisational performance specified in the structural model. Analysis and results related to these two stages are further discussed in the following paragraphs.

3.12.1 Measurement Model

The measurement model refers to “the portion of the model that specifies how the observed variables depend on the unobserved, composite, or latent variables” (Arbuckle, 2007, p. 89). Therefore, the main purpose of the measurement model is to determine items that are related to each one of latent variables. Consequently, in this thesis, the measurement model is applied to define the pattern by which measures are loaded onto respective variables (latent variables) (Byrne, 1998; Sekaran, 2003). Each of the constructs under consideration, including competing values, knowledge chain activities and organisational performance, was discussed individually and in a particular measurement model. When the results of the analysis are inconsistent with a prespecified measurement model, the researcher should respecify and analyse the measurement model (Bollen, 1998; Cunningham et al., 2006). Therefore, in this stage, two steps are taken while evaluating the measurement models. In the first step, the

unidimensionality of each factor is assessed and, in the second step, the reliability and validity of each construct is evaluated. More detailed discussion of these two steps is presented in the following sections.

3.12.2 Assessing the Unidimensionality

In this section and in the first step, the measurement model for each of the underlying constructs is specified by exploring the path diagram. Then, in the next step, it delineates the application of multi-item scales in measuring each factor in the measurement model. These steps are followed by explaining the procedures carried out to adjust the measurement model.

The constructs studied in the proposed model in this research are competing values (market, hierarchical, adhocracy and clan), knowledge chain (which contains primary activities and secondary activities) and organisational performance. Each of these constructs was tested for unidimensionality in its respective measurement model.

In Figures 3-6 to 3-12, rectangles present observed variables, which are items that developed previously. As can be seen, single-headed arrows are used to link the factors (latent variables) to their respective items (indicators), and to link the error terms to their indicators. In these figures, it can be seen that factors are linked by double-headed arrow instead of single-headed arrow. This is because of the fact that these factors are correlated and there is no theoretical reason that one is caused by the other. Moreover, there are numbers on the arrows linking factors to their items indicating the standardised parameter estimates or factor loadings. The square multiple correlations are appeared next to the edge of items and correlation between factors or latent variables are shown next to the double-headed arrows.

In a measurement model, each factor has been measured by several items (Anderson & Gerbing, 1988) to unambiguously assign meaning to the estimated constructs. Here, Kline (2010, p. 116) asserts that, “if a standard CFA model with a single factor has at

least three indicators, the model is identified. If a standard model with two or more factors has at least two indicators per factor, the model is identified." Consistently, Crosby and Taylor (1983) mentioned that in measuring relationships with long-term perspective, it is improbable that an item appropriately measures a construct. The necessary and sufficient number of items per each construct is also studied by some other researchers. Bentler and Chou (1987) believe that no more than twenty variables should be contained in a measurement model with at most five to six constructs. The main reason is that the interpretation of results and their statistical significance will be tough as the number of concept gets too large (Marcoulides & Raykov, 2000). Therefore, as the first step in measurement model, and as can be seen in Tables 3-9, 3-13 and 3-18, each factor has the appropriate number of indicators or items. While confirming measurement models, the researcher may confront some items in the scales that are expendable. In such a case, removing these expendable items will result in respecification of the measurement model (Arbuckle, 2007; Cunningham et al., 2006; Hair et al., 2010; Joreskog & Sorbom, 1996). This process leads to parsimonious unidimensional constructs (Anderson & Gerbing, 1988).

The main reason for the above mentioned process is two deliberations recommended by Hooper et al. (2008). First, factors should be measured by indicators that have relatively high-standardised factor loadings. "In deciding what is large or small, a rule of thumb suggests that factor loadings greater than ±0.33 are considered to meet the minimal level of practical significance" (Ho, 2006, p. 207).

Second, the estimated correlations between the factors should not be greater than 0.90 (Kline, 2010, p. 116). In this case, if, for example, the estimated correlation between market values and hierarchical value, in Figure 3-6, is greater than 0.90, the items do not measure two disparate factors. More accurately, these two factors overlap each other and they are not there is an overlap between these two factors, and they are

empirically indistinguishable. These two deliberations along with the overall goodness-of-fit indices approve the unidimensionality of each measurement model.

The model fit can be evaluated more precisely by inspecting modification indices and standardized residuals (Joreskog & Sorbom, 1996) and (Schumacker & Lomax, 2004).. Modification indices deal with calculation of non-estimated relationships in the specified model. The standardised residual or normal residual is concerned with the difference between the estimated correlation/covariance matrix and observed correlation/covariance matrix.

A common rule of thumb about the values of modification indices suggest that values greater than 3.84 indicate that the chi-square value would significantly decrease if the parameter is estimated. Moreover, standardized residual values more than 2.58 in absolute value indicate a specification error in the model (Cunningham et al., 2006). In this research, the measurement model is not only evaluated based on statistical principles, but also theoretical justifications are considered (Anderson & Gerbing, 1988; Kim & Hagtvet, 2003). In fact, the eventual aim of this research is to establish a model that is meaningful and fits the data and theory statistically (Jöreskog, 1993). Cunningham et al. (2006, p. 15) also assert that “the researcher should guard against making changes solely based on data-driven grounds in an attempt to get a model that fits the data better.”

A last point in verifying each measurement model is the parameter estimation method used in the research. These methods include Instrumental Variables (IV), Maximum Likelihood Estimators (MLE), Unweighted Least Squares (ULS) and Generalised Least Squares (GLS). Regarding the sample size of 302 respondents, this research applies the MLE as the parameter estimation method for the three reasons.

The first reason is that, based on Jöreskog (1993), under the multivariate normality assumption, MLE is considered as the most appropriate parameter estimation method,

particularly when the sample size is large. The second reason is that MLE has “the desirable asymptotic, or large-sample, properties of being unbiased, consistent, and efficient”, Anderson and Gerbing (1988). The final reason is the fact that the appropriateness of MLE for testing theory and its desirable properties in statistical testing procedure lead to widespread use of this method by a number of management scholars such as Crosby and Taylor (1983).

Now, the measurement models are developed and for each construct, include competing values, knowledge chain, and organisational performance, the unidimensionality testing results are presented in AMOS 20.0.

3.12.2.1 Competing Values

Competing value was measured using four separate constructs: clan, adhocracy, hierarchical and market. Each of these factors has been measured by a number of questionnaire items. In total, 20-items were used to measure the competing value constructs. Clan was measured by five questionnaire items labelled CCL1, CCL2, CCL3, CCL4 and CCL5; Adhocracy was measured by five items labelled CAD1, CAD2, CAD3, CAD4 and CAD5; and hierarchical by five items labelled as CHI1, CHI2, CHI3, CHI4 and CHI5 and, finally, market which is consisted of five items, CMA1, CMA2, CMA3, CMA4 and CMA5 (see Table 3-9). Given that these constructs were considered as exogenous variables, the SEM model specifies that they are inter-correlated.

Table 3-9:

Competing values items

Original Item	Item Label	Item Deleted
This organisation is a very personal place. It is like an extended family. People seem to feel comfortable sharing their personal situations with their colleagues.	CCL1	Deleted
This organisation emphasizes personal and professional development. There is a strong focus on developing skills and providing interesting work opportunities.	CCL2	
This organisation is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.	CCL3	
The "glue" that holds this organisation together is committed to innovation and development. There is an emphasis on being on the cutting edge.	CCL4	
The management style in this organisation is characterized by individual risk-taking, innovation, freedom, and uniqueness.	CCL5	
This organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.	CAD1	
The "glue" that holds this organisation together is loyalty and mutual trust. Commitment to this organisation runs high.	CAD2	
The management style in this organisation is characterized by teamwork, Consensus, and participation.	CAD3	
This organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.	CAD4	
This organisation defines success on the basis of having the most unique or newest products. It is a product/service leader and innovator.	CAD5	
This organisation is very result- oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.	CHI1	
The management style in this organisation is characterized by hard-driving competitiveness, high demands, and achievement.	CHI2	
The "glue" that holds this organisation together is the emphasis on achievement and goal accomplishment. Aggressiveness and winning are common themes.	CHI3	
This organisation emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.	CHI4	
This organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.	CHI5	
This organisation is a well controlled and structured place. Formal procedures Generally govern what people do.	CMA1	
The management style in this organisation is characterized by security of employment, conformity, predictability, and stability in relationships.	CMA2	
The "glue" that holds this organisation together is formal rules and policies. Maintaining a smooth-running organisation is important.	CMA3	
This organisation emphasizes permanence and stability. Efficiency, control and smooth operations are important.	CMA4	Deleted
This organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low-cost production are critical.	CMA5	

Source: Author

The confirmatory factor analysis (CFA) model of CV was represented using four constructs (clan, hierarchy, adhocracy and market). As outlined in Table 3-9, each construct was measured by using five items. Also the measurement model in Figure 3-6 shows the correlation between competing values constructs and their items.

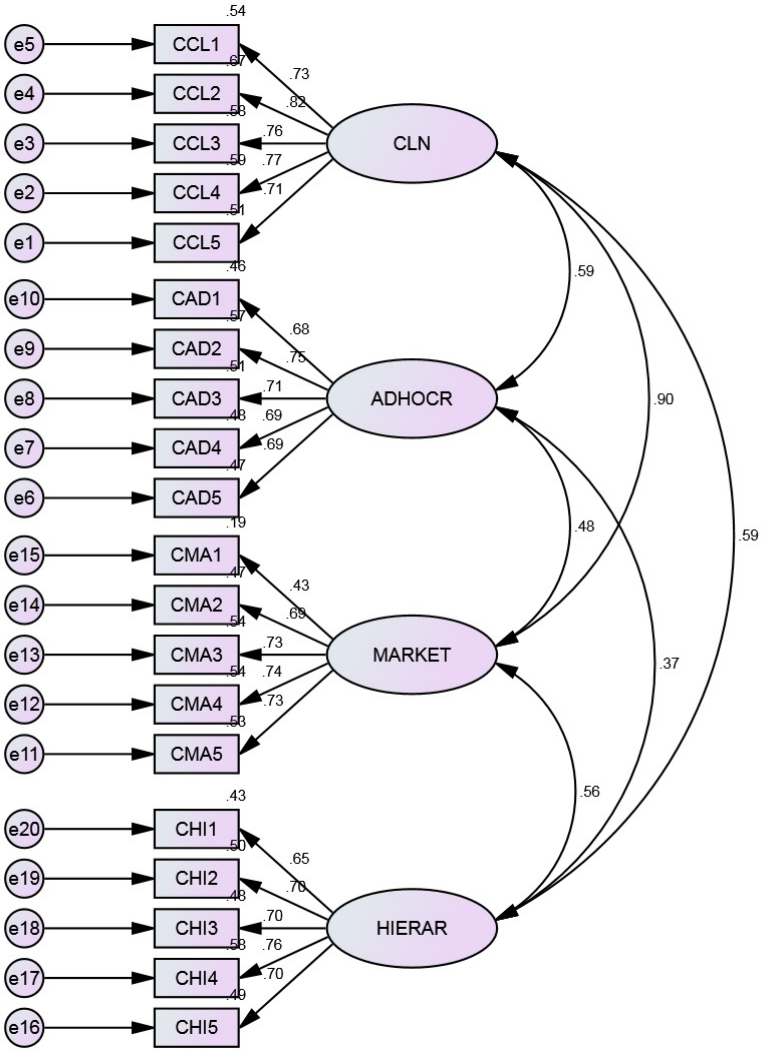

Figure 3-6 : CFA for competing value model 1

Source: Author

To examine the appropriateness of the measurement model, the fitting indices should be considered.

Table 3-10 :

Fitting indices of CFA for competing value mode 1

	CMIN					RMR, GFI		Baseline Comparisons	RMSEA
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	46	291.117	164	.000	1.775	.068	.915	.952	.051
Saturated model	210	.000	0			.000	1.000	1.000	
Independence model	20	2845.270	190	.000	14.975	.422	.284	.000	.215

Source: Author

Although standardized parameter estimates were all significant (P<0.001), the results of the CFA indicated that the initial measurement model needed to be re-specified. The chi-square was significant (χ^2 = 291.117, df =164, P = .000, N= 302). The GFI= 0.915, AGFI = 0.882, RMSEA = 0.051, CFI = 0.952, and CMIN/DF= 1.775. Besides, CFA results also indicate that the intercorrelations among competing values types do not exceed 0.90, demonstrating discriminate validity.

Inspecting standardized residual covariances indicated that some residual values were not within the recommended range by Hair, et al (1995) (less than 2.58). These values indicated that the indicator CMA1 (the first item of the Market Culture), had unacceptably high values, as in Table 3-11. It should be mentioned that this Table shows the high value items rather than the whole table of standardized residuals.

Table 3-11 :

Standardized residuals covariance of competing value

	CAD1	CAD2	CAD3	CAD4	CAD5
CMA1	5.372	4.941	3.495	4.407	4.387

Source: Author

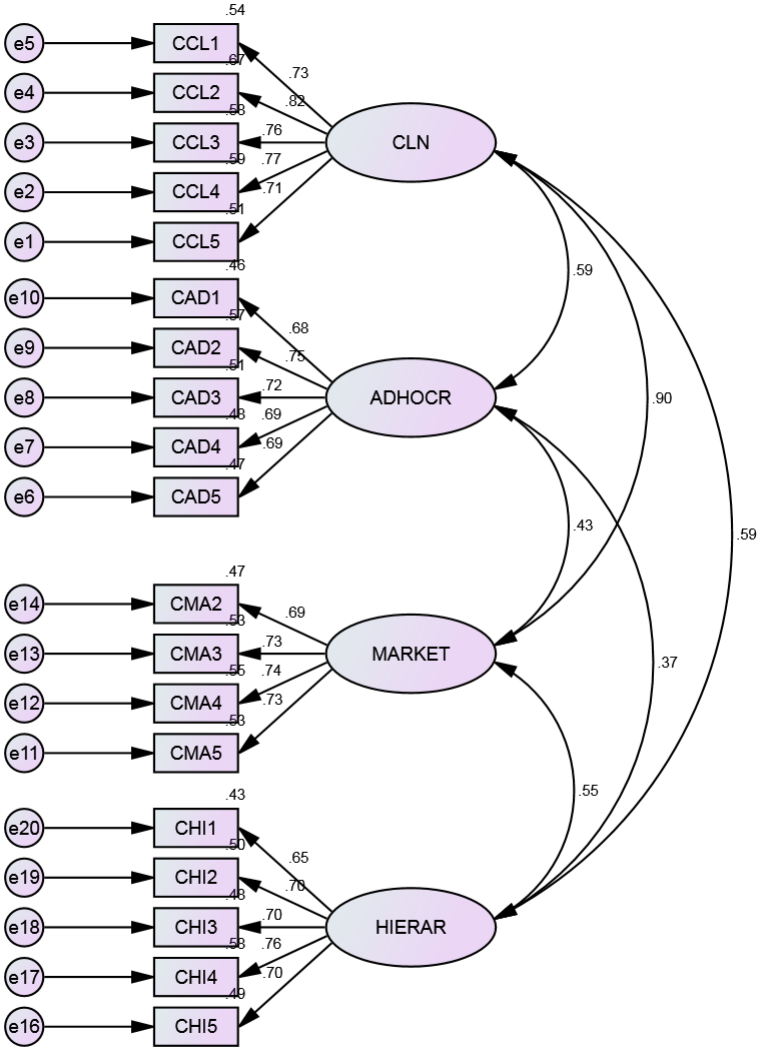

Figure 3-7 :CFA for competing value model 2

Source: Author

Although, the factor loading of the deleted item was relatively high compared to the total, the removed item did not make a considerable change in the content of the construct as it was conceptualized. The main reason is that the factor loadings of the remaining items had the highest initial loadings, and the meaning of the factors had been preserved by these items.

Following the process which is described above, CFA was executed again with the one redundant item removed (Figure 3-7).

Table 3-12 :

Fitting indices of CFA for competing value model 2

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	44	203.169	146	.001	1.392	.044	.934	.977	.036
Saturated model	190	.000	0			.000	1.000	1.000	
Independence model	19	2704.822	171	.000	15.818	.425	.290	.000	.222

Source: Author

As a result, the goodness of fit indices improved and the modified model illustrated a better fit to the data (χ^2 = 203.169, df = 146, P = .001, N =302). The GFI increased to 0.934 and AGFI = 0.917, NFI= 0.918, CFI = 0.977, RMSEA = 0.036, CMIN/DF= 1.392.

Though the chi-square is significant, these values indicate that the model fits adequately with the data. In fact, this model fits the data adequately and the correlations between the underlying factors do not exceed 0.90 (see the values on the double-headed arrows in Figure 3-7), so no further adjustments were required.

As illustrated in Figure 3-7, the modified model was tested with four measuring indicators, Clan Culture (CCL1, CCL2, CCL3, CCL4, CCL5) Culture Adhocracy (CAD1, CAD2, CAD3, CAD4, CAD5) Culture Hierarchal (CHII1, CHI2, CHI3, CHI4, CHI5) and Culture Market (CLM2, CLM3, CLM4, CLM5). The calculation shows that the standardized factor loadings for these measures were all acceptable and higher than the recommended level of 0.033. This indicates that the standardized parameter estimate were deemed to be statistically significant (P<0.001), providing unidimensional scales for each of the four factors.

3.12.2.2 Knowledge Chain Activities

The measurement model of knowledge chain activates was analysed using nine proposed factors (five for primary or organisational activities and four, secondary or management activities). In total, 36-items represented the nine factors of knowledge chain activities subject to CFA analysis. Knowledge chain activities are considered as constructs, because it consisted of a total weighted score across the nine combinations of variables.

Table 3-13 :

Knowledge chain items

Original Items	Item Label	Item Deleted
This part questions are about **Knowledge acquisition**. Knowledge acquisition means gathering and obtaining knowledge in the organisation.	**KAC**	
21.This organisation required knowledge is obtained through :		
a) Gathering advice from consultant, customers or supplier	KAC1	
b) Contracting with other companies in order to find their knowledge	KAC2	
c) Hiring employees from competing firms especially for accessing the knowledge development	KAC3	
d) Collecting and improving knowledge from outside	KAC1	
Knowledge selection is selecting the best knowledge among different available knowledge	**KSE**	
22. In order to choose the best knowledge in your organisation which way is normally used?		
a) Participating in house training to find the best knowledge and select that knowledge	KSE1	
b) Recalling success stories	KSE2	
c) Identifying experts in a subject matter and find out their idea	KSE3	
d) Selecting the expert most appropriate for a particular query	KSE4	
Knowledge generation is producing knowledge by either discovery or derivation from existing knowledge.	**KGE**	
23. This organisation is producing knowledge by:		
a) Creating knowledge from historical events which learned	KGE1	
b) Improving process through experience in use	KGE2	
c) Creating knowledge from innovations and new ways	KGE3	
d) Creating new knowledge from the application of existing knowledge	KGE4	
Knowledge Assimilation (internalization) is changing the state of an organization's knowledge resources by distributing and storing acquired, selected, or generated knowledge	**KASEM**	
24. How do you internalize knowledge between individuals in the organisation?		
a) Using internet to transfer your experience toward their colleagues.	KASEM1	
b) Using available facilities to send your individual knowledge to the others	KASEM2	
c) Broadcasting a new regulation via email	KASEM3	
d) Publishing in newsletter	KASEM4	

Original Items	Item Label	Item Deleted
Knowledge Emission (externalization) is embedding knowledge into organizational outputs for release into the environment	**KEM**	**Deleted**
25. The employees in this organisation distribute their knowledge through		
a) Posting an idea on an internet	KEM1	
b) Storytelling for their colleagues about your knowledge	KEM2	
c) Offering advisory service for their colleague	KEM3	
d) Create a new product or service, according to previous experience	KEM4	
Knowledge Measurement is assessing values of knowledge resources, knowledge processors, and their deployment	**KME**	
26. The Management measures time and money which saved by implementing knowledge practices.		
a) Conducting customer satisfaction measurement	KME1	
b) Measuring time money and personal time saved by implementing knowledge activities	KME2	
c) Identifying knowledge assets and their associated risk Improving process through process analysis	KME3	
d) Measuring the success and failure rate of programs linked to the KM assets over time	KME4	
Knowledge Control is ensuring that needed knowledge processors and resources are available in sufficient quality and quantity, subject to security requirements	**KCO**	
27. The management providing open access to collected information for the employees		
a) Providing open access to collected information	KCO1	
b) Identifying existing control and security measure over the assets	KCO2	
c) Providing adequate knowledge for the technology involved	KCO3	
d) Improving defect analysis and customer service	KCO4	
Knowledge Coordination is managing dependencies among KM activities to ensure that proper processes and resources are brought to bear adequately at appropriate times	**KCOO**	
28. The management supports appropriate communication channels for knowledge flow in our organisation		
a) Determine appropriate communication channels for knowledge flow	KCOO1	
b) Providing access to rich pools of idea so others can capitalize on them	KCOO2	
c) Motivate employees to perform KM activities	KCOO3	
d) Making sure upper management understands and is ready to support knowledge	KCOO4	
Leadership is establishing conditions that enable and facilitate fruitful conduct of KM	**KLE**	
29. The management provides opportunities by placing employees in situations where they can use their knowledge.		
a) Sponsoring supporting and nurturing collaborative knowledge networks	KLE1	
b) Providing opportunities by placing employees in situations where they can use their knowledge	KLE2	
c) Facilitating and accelerating knowledge	KLE3	
d) Developing a km action plan	LKE4	

Source: Author

Each component variable represents the independent dimensions of knowledge management activities (Holsapple, 2004). The analysis was organized with knowledge management activities being measured as partial aggregation constructs, Table 3-14.

There are three (Bentler, 1995) or four (Bagozzi, 1994) ways to evaluate the complex structural models in the literature. Bagozzi and Heatherton state these “levels of abstraction” based on their conceptualization. There are two extreme points in model assessment called aggregation (most abstract) and total disaggregation (least abstract). Also, there are two other conditions in between these two extremes of model assessment which are called partial aggregation and partial disaggregation.

1. Total disaggregation utilises each item as a separate indicator of the relevant construct. This allows the most accurate level of analysis for testing a model (Baumgartner & Homburg, 1996) and the results are reported for each individual item. This method may lead to high levels of error, particularly when the number of items is large (Bagozzi & Yi, 1988).

2. Total aggregation makes a single combination of variables, in which all the items are summed to measure a construct (Bagozzi & Yi, 1988). This approach establishes an aggregation of both dimensions and items. The characteristics of the total aggregation model are simplicity, the capability of capturing the root of the meaning of a concept and the polishing of random error (Bagozzi & Yi, 2012).

3. The partial aggregation approach, which is applied in this research, involves the aggregation of the indicators of each dimension of the overall construct, which is retained by each separate underlying factor (Bagozzi, 2011). In this way, a composed variable is produced from the items of each separate dimension of the construct and lead to single indicator of a single factor model. Therefore, with this approach, SEM confirmatory factor analysis (CFA) is able to test an overall model. This approach is able to assess the greater substantive content for each variable within a smaller matrix, less distraction from accumulated errors and, thereby, greater reliability (Bentler, 1995). Malhotra, et al. recommended that these combinations are formed from scales for which unidimensionality and reliability are established (Malhotra & Peterson, 2001).

4. The last method is partial disaggregation which involves the establishment of two or more combination of variables for each construct (Bentler, 1995). The composition of variables may be made of identified sub-dimensions of an indicator construct of the overall latent constructs (Bagozzi, 1994) or mentioned item may be pointed out and aggregated randomly as “it is expected that any combination of a construct’s variable indicators should yield the same model fit” (Dabholkar et al., 1996). Therefore, in order to calculate knowledge chain partial aggregation, Table 3-14 is applied.

All the factors of the knowledge chain model were measured using 4 items. The CFA analysis showed that the covariance matrix for the composite variables among the items of the nine factors was positively definite due to multicollinearity.

Table 3-14 :

Aggregating knowledge chain items

Variables	Aggregations
Acquisition	KAC=(KAC1 + KAC2 + KAC3+KAC4) / 4
Selecting	KSE=(KSE1 + KSE2 + KSE3+KSE4) / 4
Generation	KGE=(KGE1 + KGE2 + KGE3+KGE4) / 4
Assimilation	KASEM =(KASEM1 + KASEM2 + KASEM3+ KASEM4) / 4
Emission	KEM=(KEM1 + KEM2 + KEM3 + KEM4) / 4
Measurement	KME=(KME1 + KME2 + KME3+ KME4) / 4
Control	KCO=(KCO1 + KCO2 + KCO3 + KCO4) /4
Coordination	KCOO=(KCOO1 + KCOO2 + KCOO3 + KCOO4) / 4.
Leadership	KLE=(KLE1 + KLE2 + KLE3 + KLE4) / 4

Source: Author

Aggregating the items, the measurement model can be formed. Figure 3-8 shows the factor loading in the measurement model with aggregation of the KCM items.

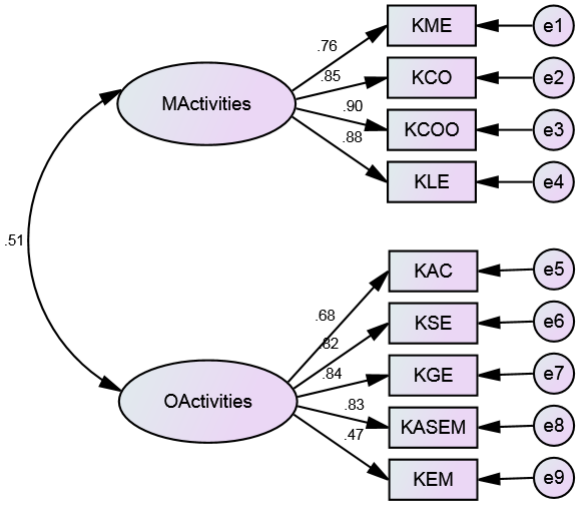

Figure 3-8 : CFA for knowledge chain model 1

Source: Author

The fitting indices, presented in Table 3-15, shows the goodness of fit of the measurement model in Figure 3-8.

Table 3-15 :

Fitting indices of CFA for knowledge chain model 1

	CMIN				**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	19	119.028	26	.000	4.578	.056	.920	.944	.109
Saturated model	45	.000	0			.000	1.000	1.000	
Independence model	9	1689.761	36	.000	46.938	.319	.340	.000	.391

Source: Author

Although standardized parameter estimates were all significant (P<0.001), the results of the CFA indicated that the initial measurement model needed to be respecified. The chi-square was significant (χ^2 = 119.028, df =26, P = .000, N= 302). The GFI= 0.920, RMR= 0.056, RMSEA = 0.109, CFI = 0.944, and CMIN/DF= 4.578.

Examination of standardized residual covariances indicated that all residual values were not within the recommended threshold (less than 2.58) and modification indices indicated that the indicator KEM (Emission) had unacceptably high values as in Table 3-16.

Table 3-16:

Standardized residuals covariance indices for KCM

	KLE	KCO	KCOO	KME
KEM	4.453	3.952	4.848	6.174

Source: Author

Removing knowledge Emission from the items of OA of KC, CFA was executed again without this redundant item, Figure 3-9.

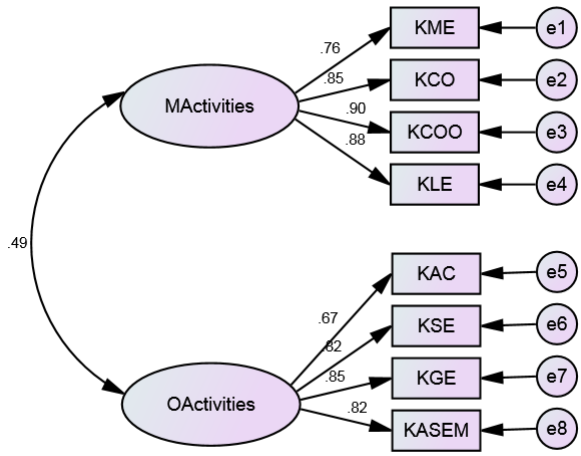

Figure 3-9 : CFA for knowledge chain model 2

Source: Author

Table 3-17 illustrates the goodness of fit indices for the modified measurement model; with elimination of knowledge Emission.

Table 3-17 :

Fitting indices of CFA for knowledge chain model 2

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	17	36.475	19	.009	1.920	.022	.969	.988	.055
Saturated model	36	.000	0			.000	1.000	1.000	
Independence model	8	1543.839	28	.000	55.137	.335	.356	.000	.424

Source: Author

As a result, the goodness of fit indices improved and the modified model illustrated a better fit to the data (χ^2 = 36.475, df = 19, P =. 009, N =302). The GFI increased to 0.969 and, CFI = 0.988, RMSEA = 0.055, CMIN/DF= 1.920. Though the chi-square is significant, these values indicate that this model fits adequately to the data.

3.12.2.3 Organisational Performance

The measurement model of organisational performance comprised of financial and nonfinancial items. As indicated in Table 3-18, items were used to measure organisational performance (OP1-OP10), whilst OP4, OP7, OP10 was deleted because of missing data.

Table3-18 :

Organisational performance items

Original Items		Item Label	Item Deleted
a)	Market share in primary market	OP1	Deleted
b)	The Return on investment	OP2	
c)	Cash flow	OP3	
d)	Cost reduction	OP4	Deleted
e)	The growth of market share	OP5	
f)	On time delivery	OP6	Deleted
g)	New product introduction	OP7	Deleted
h)	Customer satisfaction	OP8	Deleted
i)	Productivity of labour force	OP9	
j)	Sales volume	OP10	Deleted

Source: Author

As shown in Figures 3-10 through 3-12 and Tables 3-19 through 3-22, OP1, OP6 and OP8 removed, respectively, in three steps because the goodness of fit indices show that the model need to be respecified and some of the standardized residual covariance's were greater than the considered threshold value. Besides the standardized estimates should not be less than the threshold mentioned before.

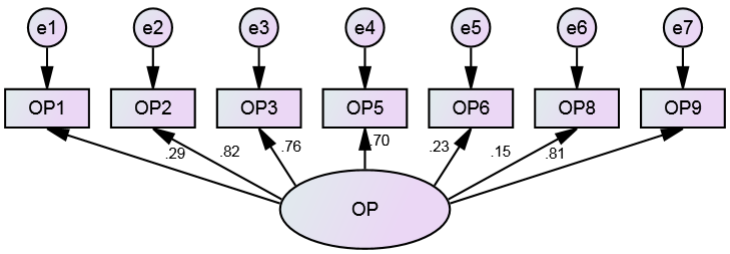

Figure 3-10 : CFA for organisational performance model 1

Source: Author

Figure 3-10 shows the measurement model of performance with factor loading of the Items.

Table 3-19:

Fitting indices of CFA for organisational performance model 1

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	14	217.759	14	.000	15.554	.121	.865	.731	.220
Saturated model	28	.000	0			.000	1.000	1.000	
Independence model	7	778.277	21	.000	37.061	.494	.538	.000	.346

Source: Author

As shown in Table 3-19, the result of goodness of fit indices for organisational performance model illustrated (χ^2 = 217.79, df = 14, P =. 000, N =302). The GFI = 0.865 and, CFI = 0.731, RMSEA = 0.220, CMIN/DF= 15.554. Though the chi-square is significant, these values indicate that this model fits adequately to the data.

Table 3-20 :

Standardized residual covariance for OP

	OP6	**OP8**
OP1	11.100	2.009

Source: Author

In order to adjust a better model for organisational performance, OP1 should be eliminated for better fitting model.

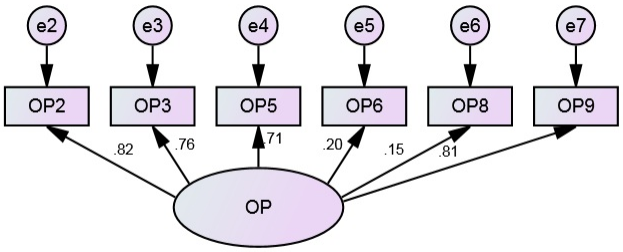

Figure 3-11 :CFA for organisational performance model 2

Source: Author

After eliminating the OP1, it would refer to fitting indices table, Table 3-21, to see how much the model is fitted.

Table 3-21:

Fitting indices of CFA for organisational performance model 2

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	12	9.745	9	.372	1.083	.034	.990	.999	.017
Saturated model	21	.000	0			.000	1.000	1.000	
Independence model	6	547.910	15	.000	36.527	.540	.565	.000	.344

Source: Author

As is shown in Table 3-21, the result of goodness of fit indices for organisational performance model illustrated (χ^2 = 9.745, df = 9, P =.372, N =302). The GFI = 0.990 and CFI = 0.999, RMSEA = 0.017, CMIN/DF= 1.083. Though the chi-square is significant, these values indicate that this model fits adequately to the data. But, because of their standard estimates, OP6 and OP8 should be deleted.

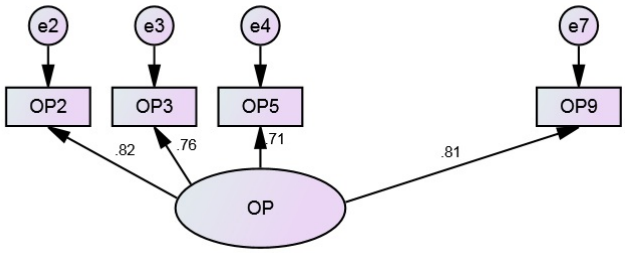

Figure 3-12: CFA for organisational performance model 3

Source: Author

Figure 3-13 illustrates the CFA model of the organisational performance with the elimination of two more items.

Table 3-22 :

Fitting indices of CFA for organisational performance model 3

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	8	2.431	2	.297	1.215	.019	.996	.999	.027
Saturated model	10	.000	0			.000	1.000	1.000	
Independence model	4	524.688	6	.000	87.448	.763	.481	.000	.536

Source: Author

The deletion of the three items (OP1, OP6, OP8) has significantly changed the content of the construct as it was conceptualized. The final model with the three items deleted improved the fit of the model. In this case, χ^2 = 2.431, df = 2, P = .297, N =302. All of GFI = 0.996, AGFI = 0.980, NFI = 0.995, CFI = 0.999, TLI = 0.998, RMSEA= 0.027, and CMIN/df= 1.215 are improved. As it is mentioned, the measurement model would be judged based on an acceptable fit, especially with a large sample (Bagozzi & Yi, 1988). This model fits the data adequately and no further adjustments were required.

So, the final modified model was represented with four items. The standardized factor loadings for these measures were all high (above 0.50). This indicates that standardized parameter estimates for these measures were deemed to be statistically significant (P<0.001).

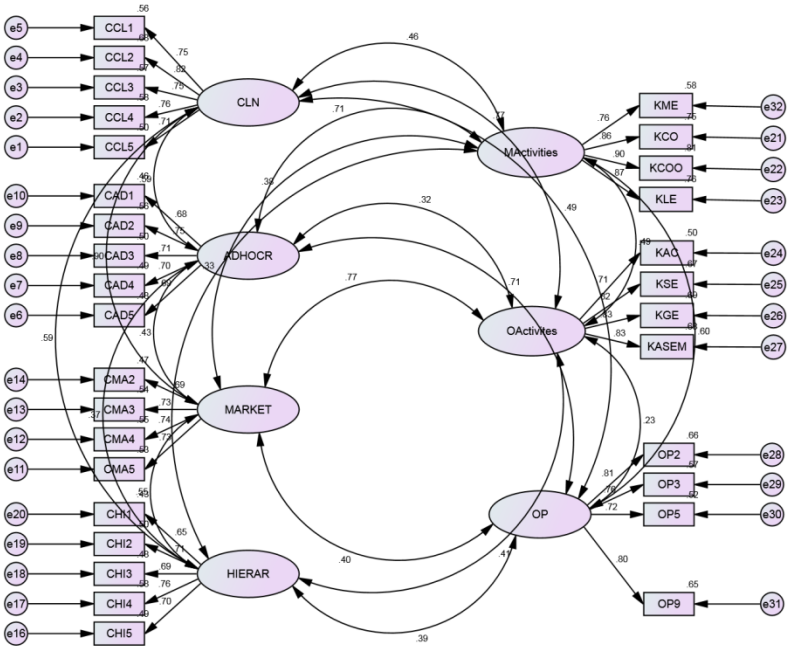

Figure 3-13 : Measurement model 1

Source: Author

Figure 3-14 shows the overall measurement model of variables. In this case, all variable correlations are concerned.

Table 3-23:

Fitting indices of measurement model 1

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	83	608.756	413	.000	1.474	.047	.883	.962	.040
Saturated model	496	.000	0			.000	1.000	1.000	
Independence model	31	5661.088	465	.000	12.174	.392	.209	.000	.193

Source: Author

As is shown in Table 3-23 the result, of goodness of fit indices for organisational performance model illustrated (χ^2 = 608.756, df = 413, P =. 000, N =302). The GFI = 0.883, RMR = 0.47, and, CFI = 0.962, RMSEA = 0.40, CMIN/DF= 1.47. Though the chi-square is significant, these values indicate that this model fits adequately to the data. The examination of standardized residual covariances indicated that one of the residual values were not within the recommended threshold level, therefore, CCL1 which is the first question of the clan value had high value (2.73), hence it should be omitted from the measurement model. In the next steps, it will be illustrated.

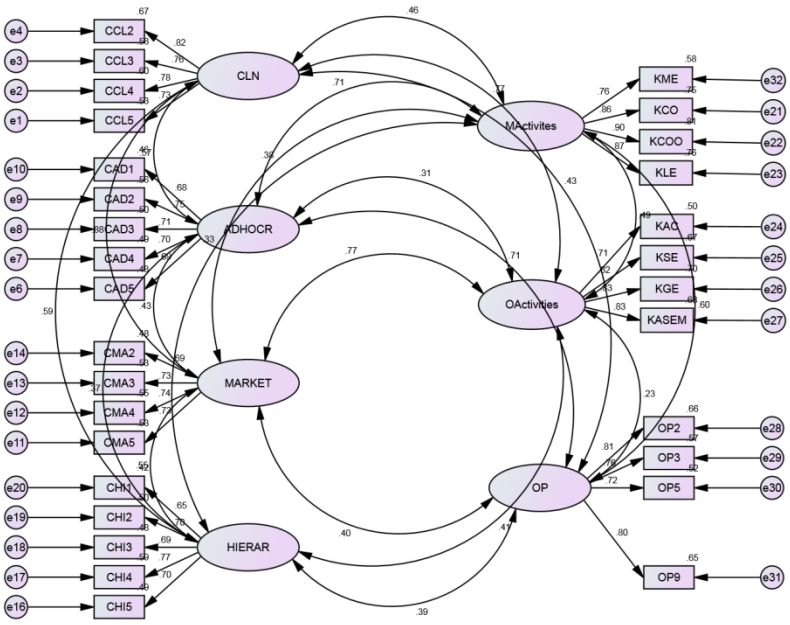

Figure 3-14 : Measurement model 2

Source: Author

After eliminating CCL1, to examine the effect of this change on measurement model, it refers to Table 3-24.

Table 3-24:

Fitting indices of measurement model 2

	CMIN					RMR, GFI		Baseline Comparisons	RMSEA
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	81	511.637	384	.000	1.332	.042	.899	.974	.033
Saturated model	465	.000	0			.000	1.000	1.000	
Independence model	30	5356.963	435	.000	12.315	.384	.218	.000	.194

Source: Author

As is shown in Table 3-24, the result of goodness of fit indices for organisational performance model illustrated (χ^2 =511.637, df = 384 P =. 000, N =302). The GFI = 0.899, RMR= 0.045 and, CFI = 0.974, RMSEA = 0.033, CMIN/DF= 1.332. Though the chi-square is significant, these values indicate that this model fits adequately with the data.

3.12.3 Reliability and Validity of the Constructs

Assessing the unidimensionality, the next step is to evaluate the reliability and validity of the constructs. This step should be taken before answering the hypotheses via structural equation modelling (De Wulf, 2001). Reliability of the constructs, which were discussed in the measurement models, will be assessed by Cronbach's alpha, construct reliability (CR), and average variance extracted (AVE), and validity will be evaluated by construct, convergent and discriminate validity.

The Cronbach's (1951) alpha coefficient, as the first criterion considered in this research, is used to assess reliability of measures and, in the next step, confirmatory factor analysis (CFA) is applied. As shown in Table 3-26, the values of Cronbach's alpha coefficient, for all constructs, exceed the threshold level of 0.7 suggested by Nunnally (1978). Applying confirmatory factor analysis, CR and AVE were computed from model estimates, by the CR and AVE formulas (Bagozzi & Yi, 1988; Fornell &

Larcker, 1981). The threshold values recommended by Bagozzi and Yi are equal to or greater than 0.60 for CR, and equal to or greater than 0.50 for AVE. Therefore, since the above mentioned values are in the acceptable range, the data support the reliability of the constructs studied in this research (see Table 3-25).

The validity of constructs will be assessed by confirmatory factor analysis. This research utilizes construct, convergent and discriminate validity (see Section 3.9.8) as validity criteria. Empirically, construct validity means the measure presents an appropriate description of the variables, intended to be measured in the research. Bagozzi (1994) considers construct validity as an essential prerequisite for theory testing. In this research, construct validity is confirmed by goodness-of-fit indices (Hsieh, 2004).

The convergent validity of the constructs is assessed by the data, since all items related to a construct have statistically significant factor loadings (Anderson & Gerbing, 1988; Kline, 2010). As illustrated in Table 3-25, all factor loadings are statistically significant ($P<0.001$) and exceed the threshold value 0.50. The AVE values, in Table 3-25, are also considered as a supportive criterion of convergent validity.

As the last step in studying the validity of the constructs, this research evaluated discriminate validity using two methods. Kline (2010) suggested that the calculated correlations between factors should not exceed 0.90. This assessment affected each measurement model and items inducing high correlations among factors were omitted. This method is considered as the first method for revealing evidence for discriminate validity. The second method for evaluating discriminate validity is based on testing the pattern structure coefficient to resolve about empirical distinguishability of factors in the measurement model (Thompson, 1997). The pattern coefficient matrix is composed of the standardised factor loadings obtained from AMOS analysis (Kline, 2010). The

results from testing the structural coefficients illustrate that the competing value factors are different from each other (see Appendix A).

Table3-25:

Measurement model evaluation

Construct	Item	Factor Loading	AVE	CR	Cronbach's alpha (α)
CLN	CCL4	0.776	0.627	0.870	0.870
	CCL3	0.773			
	CCL2	0.845			
	CCL1	0.771			
ADHOCR	CAD5	0.702	0.546	0.828	0.827
	CAD4	0.741			
	CAD3	0.786			
	CAD2	0.724			
MARKET	CMA5	0.769	0.541	0.825	0.822
	CMA4	0.743			
	CMA3	0.734			
	CMA2	0.694			
HIERAR	CHI5	0.720	0.549	0.830	0.828
	CHI4	0.811			
	CHI3	0.714			
	CHI2	0.714			
MActivities	KME	0.776	0.758	0.926	0.923
	KCO	0.886			
	KCOO	0.896			
	KLE	0.918			
OActivities	KAC	0.705	0.636	0.874	0.870
	KSE	0.810			
	KGE	0.841			
	KASEM	0.826			
OP	OP2	0.817	0.600	0.857	0.856
	OP3	0.759			
	OP5	0.721			
	OP9	0.799			

Source: Author

3.12.4 Review of Measurement Model

As mentioned previously, a measurement model is defined for each latent variable, where each construct is expounded by the observed variables. In order to evaluate the measurement model, this research is examined in two steps. First, the unidimensionality is assessed and then, applying CFA, the validity and reliability are inspected. In the first step and in order to assess unidimensionality, the relation between each factor and its items is evaluated in the measurement model and the model is completely specified.

Obtained results suggest the revision of the fully specified measurement model to render a more parsimonious model. The model re-specification was based on highly correlated factors (i.e., > 0.90) (Kline, 2010) demonstrating lack of discriminant validity, investigation of standardised parameter estimates to find items that are loaded with low values on their hypothesised factor, inadequacy of fit of the model to the data (considering goodness-of-fit indices), and residuals with large values and modification indices. The re-specification was carried out in conjunction with the theory and the acceptable fit of the modified model was tested later to pursue further analysis.

In the second step, reliability and validity of the modified model constructs were assessed. For this purpose, Cronbach's alpha, CR and AVE are used to evaluate the internal consistency. As shown in Table 3-26, the observed measures ascertain values above the recommended levels, which are required in this thesis (i.e., Cronbach's alpha with 0.7, CR with 0.6, and AVE with 0.5), which demonstrates the adequacy constructs' reliability.

To assess validity, this research inspects convergent validity, which is confirmed by all statistically significant items ($P<0.001$) that are loaded on their respective factors. Convergent validity was confirmed by being AVE of 0.50 and above. Moreover, construct validity is supported by goodness-of-fit indices. Redundant items, which lead to high correlation, are eliminated and the results of pattern structure induce the

discriminant validity; these coefficients indicate empirical distinguishability of each factor in the measurement model.

Up to this point, unidimensionality of the measurement models, along with reliability and construct, convergent and discriminant validity, are analysed. The next stage is to carry out the structural model analysis.

In the following chapters, it is tried to answer hypothesis testing problems, presented in chapter two, via several structure models. All parameters in these models were estimated by maximum likelihood (ML) estimation method in AMOS 20.0. The measurement models presented in this chapter are utilized to identify the indicator variables in the structure models.

CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

In this thesis, chapter four, five and six are devoted to analysing data to answer research questions. This chapter, as the first analytical chapter, tests the direct relationships between competing value framework constructs as an independent variable and management activities, organisational activities and organisational performance as dependent variables. The applied method is structure equation modelling through Amos software. Structure equation model tests the whole framework in one shot, however, in this thesis each hypothesis is tested separately and, finally, all will be integrated into one structure model. For this purpose, regarding the sub-hypothesis presented in section 2.10.2, the significance of the relations between CV constructs and dependent variables in the proposed theoretical framework is tested. In addition, to answer the main proposed hypothesis, the constructs of the variables are loaded on one factor in order to study the significance of the relationship between variables.

4.2 The Hypothesized Structural Model

To test the hypothesis presented in the theoretical framework, initially, the first, second and fifth hypothesis are considered in this chapter and the third and fourth hypothesis are presented in chapter five (See Figure 2-3 and Figure 4-1). Each of the hypotheses, studied in this chapter, has four sub hypotheses, which are tested by structural equation modelling through Amos software. Regarding structural equation modelling, which studies the framework in one structure model, this thesis tests the

relationships between variables presented in each hypothesis, separately. Therefore, in each section of this analytical chapter, one of the main hypothesis and the related sub hypothesis are investigated. The fitting indices, standardized regression weights, p-values and C.R.s show the validity of the hypothesized model. Consequently, based on validation of relationships between variables in the analytical chapters, the final model is demonstrated in chapter five.

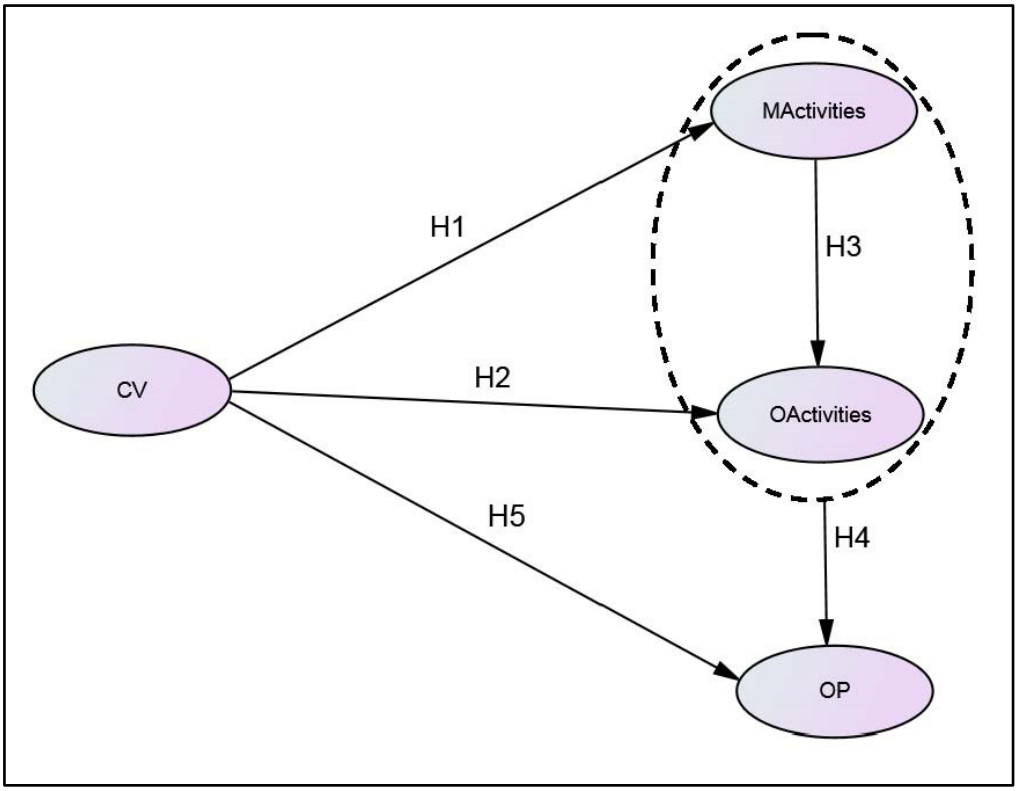

Figure 4-1: The considered hypothesis

Source: Author

Figure 4-2 shows the hypotheses studied in structural equation modelling as one model. The first five research questions and their subsequent hypotheses are presented in this model. As mentioned before, this chapter deals with research questions one, two and five.

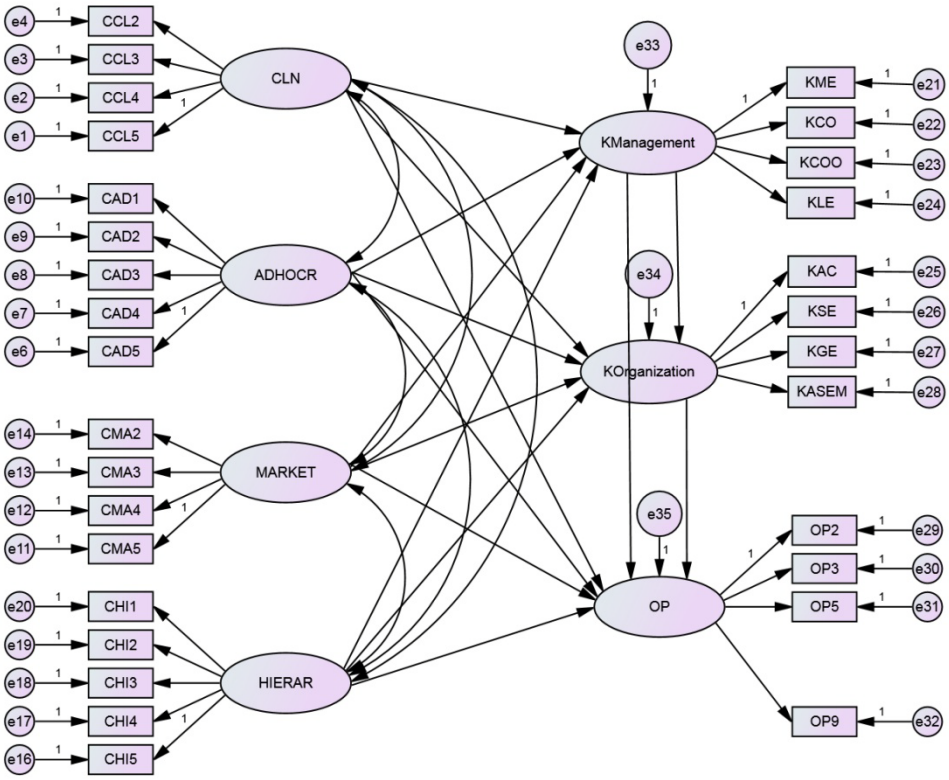

Figure 4-2 : Total structure model

Source: Author

4.3 Competing Values and Management Activities

This section deals with the first research question. As can be seen in chapter three, the measurement model of all the constructs is validated, as the first stage of structural equation modelling, and the models demonstrate adequate fit (Anderson & Gerbing, 1988; Cunningham et al., 2006; Kline, 2005). In the next step in this and following chapters, this research test and present a structural model as a second and main stage of the analysis. This section concentrates on the first question of the research which is about the effectiveness of the paths between competing values and management activities of knowledge chain model in Iranian service firms. In order to clarify the effect of the competing values, this thesis utilises structural equation modelling. The Structure equation modelling is defined as “the portion of the model that specifies how

the latent variables are related to each other" (Arbuckle, 2007, p. 90)and it helps to find out that, in the proposed model, how the latent constructs affect the others. More accurately, it demonstrates whether there is a direct, indirect or mediating relation between different constructs of a model (Byrne, 2006).

As presented in Table 4-1, the first hypothesis was represented as four paths (sub-hypothesis) H1a, H1b, H1c and H1d to determine the relationship between competing values and MA of KCM as the considered constructs in this hypothesis. As mentioned in section 2.10, the constructs of each hypothesis can be divided into two groups, exogenous and endogenous constructs, which are competing values and management activities of knowledge chain model, respectively.

Table 4-1:

First hypothesis

Hypotheses. No	**Hypotheses**
H1: Competing Value → Management Activity	**Competing values have a significant relationship with management activities.**
H1a: Clan → Management Activity	Clan has a significant relationship with management activities.
H1b: Adhocracy → Management Activity	Hierarchy has a significant relationship with management activities.
H1c: Market → Management Activity	Adhocracy has a significant relationship with management activities.
H1d: Hierarchy → Management Activity	Market value has a significant relationship with management activities.

Source: Author

In order to evaluate the structural model, it should examine the goodness-of-fit indices, presented in section 3.9.6, to assess whether the hypothesized structural model fits the data properly or not. In case of inadequacy of the fitted model, the model is respecified continually till the achieved model displays satisfactory fitting indices and. Besides, the final model should theoretically illustrate a meaningful representation of the observed data (Anderson & Gerbing; Hair et al., 2006; Tabachnick et al., 2001).

In measurement model, the assumptions underlying structural equation modelling were met and the model fit indices along with the parameter estimates were examined. Generally in testing hypotheses, using structural equation modelling, parameter estimations are of great importance since they are utilised while the estimated population covariance matrix is formed for the model (Tabachnick et al., 2001). Division of variance estimations by the respective standard errors (S.E.) result in the coefficient values. The significance of regression weight (standardized estimate) is accepted at the 0.05 level if the critical ratio (C.R.) is more than 1.96 in absolute value. For example, in the first sub-hypothesis, the path between clan value and management activates indicate the CR of -0.229 (see table 4-3) which is less than 1.96 in absolute value. Therefore, it can be concluded that the regression weight of clan values in the prediction of management activities is not significantly different from zero (P = 0.819).

4.3.1 Structural Model: Testing of the Hypotheses

In the path diagram, the standardized regression beta weights are presented on the single-headed arrow paths that connect constructs. Like measurement model, variance estimates are appeared on the edge of boxes and indicate the extent of which latent (factors) variables can explain the amount of variance in the observed variables. Besides, the correlation between two constructs is displayed on the double-headed arrow.

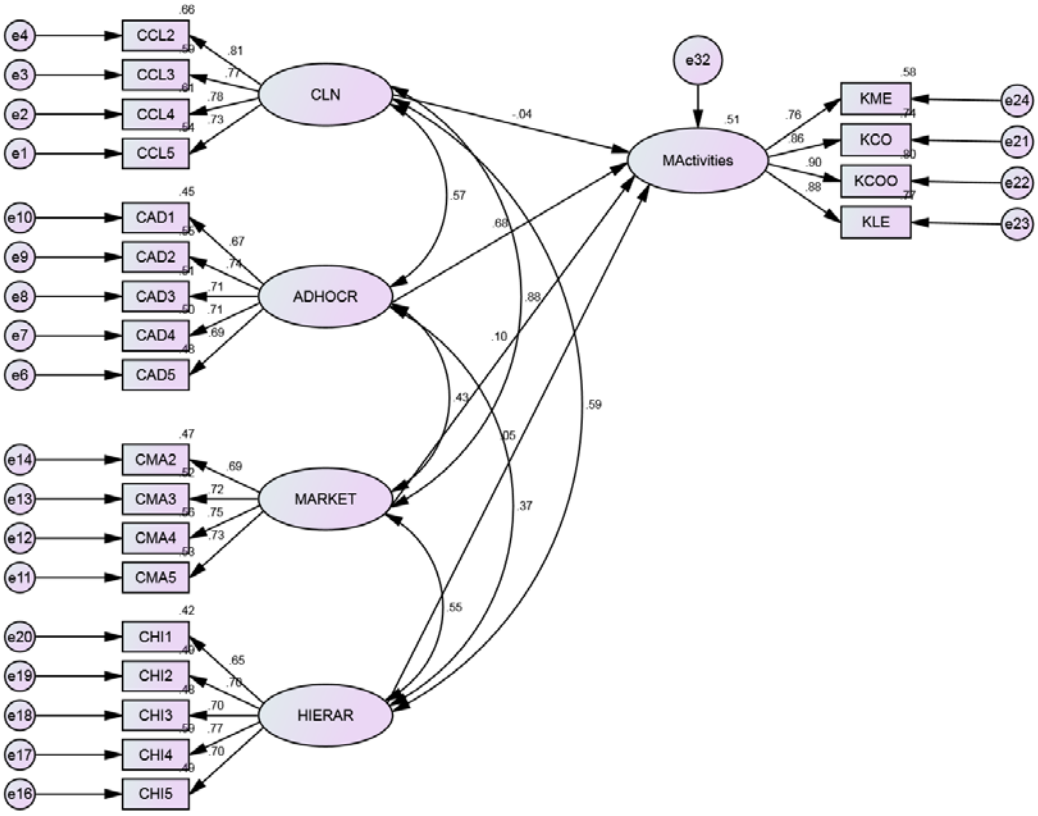

Figure 4-3: Structure model for fist hypothesis

Source: Author

To test the hypothesis H1, the relation between CV and MA, competing value items are loaded on their constructs in order to create CV factors. As it is shown in figure 4-3, this structural model tests the relationship between the competing values and management activities. Tables 4-2 and 4-3 show the fitting indices and regression weights, P-values and C.R.s, respectively.

Table 4-2:

Fitting indices for first hypotheses

	CMIN					RMR, GFI		Baseline Comparisons	RMSEA
Model	PAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default model	54	277.817	199	.000	1.396	.042	.923	.976	.036
Saturated model	253	.000	0			.000	1.000	1.000	
Independence model	22	3578.394	231	.000	15.491	.383	.268	.000	.219

Source: Author

Table 4-2 shows the goodness of fit indices for structure model or hypothesis testing of the first research question. It illustrated (χ^2 = 277.817, df = 199, P =. 000, N =302). The GFI = 0.923 and, CFI = 0.976, RMSEA = 0.036, CMIN/DF= 1.396.

Table 4-3:

Regression weights of first hypothesis structure model

	Regression Weights: (Group number 1 - Default model)					Standardized Regression Weights
	Estimate	S.E.	C.R.	P	Label	Estimate
MActivities ← CV	**.855**	**.128**	**6.703**	*******	**Par_1**	**.498**
MActivities ← CLN	-.031	.134	-.229	.819	par_24	-.043
MActivities ← ADHOCR	.534	.071	7.505	***	par_25	.675
MActivities ← MARKET	.071	.124	.571	.568	par_26	.095
MActivities ← HIERAR	.041	.055	.747	.455	par_27	.051

Source: Author,
Significant Level *<0.1, **<0.05, ***<0.001

Table 4-3 shows the regression weight of competing value constructs that can affect management activities. The estimate is based on P value that is associated with a statistical test. The level of significance is a critical probability associated with statistical hypothesis testing. It indicates how likely an inference will support the

difference between an observed value and some statistical expectation. Here, the acceptance or rejection of each sub-hypothesis will be explained, based on the P-value. Although the chi-square is significant and the values of fitting indices indicate that the model fits adequately to the data, each sub hypothesis has different P-values and significance. The P-value for the first, second and last sub hypotheses, the positive effect of clan, hierarchy and market values on secondary activities or MA, are higher than 0.05, therefore, there is not enough evidence to support these hypotheses and their positive effect on secondary activities of KC cannot be approved. The P-value which is used to evaluate the third sub hypothesis, the positive relationship between adhocracy value and secondary activities of knowledge chain model, is less than 0.001. Therefore, the null hypothesis that there is a significant relationship between adhocracy value and secondary activities was accepted. Based on table 4-3, the main hypothesis, the significant relationship between CV and MA of KC is accepted with regression weight 0.498. Therefore, CVF has a positive significant relation with MA

To improve the adequacy of the fit of this model, we can also concern the modification indices. Refereeing to the model indices the mentioned model in this section can be modified. This can be done by making a connection between the error terms e14 and e19 (M.I.= 8.828, Par Change= 0.134).

This modification does not change the standardised regression weight of the relationship between adhocracy value and MA of KC drastically (the path coefficient decreases by 0.001 and the C.R. increases by 0.038), and the other relations remain insignificant. Besides, the changes in fitting indices are so small, that can be ignored. Therefore, it can be seems that the modification does not significantly improve the goodness of fit and it is not necessary to be concerned in this section.

4.4 Competing Values and Organisational Activities

This section deals with the structure model and hypothesis testing for organisational activities of knowledge chain. For this purpose, the measurement model was tested in the first stage, in chapter three, to achieve satisfactory of fit (Anderson & Gerbing, 1988; Cunningham et al., 2006; Kline, 2005). In this stage, as the second and main stage of structural equation modelling, the related structure model is presented and tested. This section aims to test the second hypothesis, which is concerned about the significant relation between competing values and organisational activities of knowledge chain model in the firms. As the previous section, the applied method for hypothesis the significance of this relation is structural equation modelling.

As displayed in Table 4-4, this hypothesis is represented in four causal paths (H2a, H2b, H2c, H2d) which determines the relationships between different values in the competing value framework with organisational activities of knowledge chain model. The constructs considered in this hypothesis were classified into two classes; exogenous constructs which include clan, adhocracy, market and hierarchy and endogenous construct, which is organisational activities of knowledge chain.

Table 4-4:

Second hypothesis

Hypotheses No.	**Hypotheses**
H2: Competing Value → Organisation Activity	**Competing values has a significant relationship with organisational activities.**
H2a: Clan → Organisation Activity	Clan has a significant relationship with organisational activities.
H2b: Adhocracy → Organisation Activity	Hierarchy has a significant relationship with organisational activities.
H2c: Market → Organisation Activity	Adhocracy has a significant relationship with organisational activities.
H2d: Hierarchy → Organisation Activity	Market values have a significant relationship with organisational activities.

Source: Author

4.4.1 Structural Model: Testing of the Hypotheses

The path diagram, shown in Figures 4-4, represents standardized regression beta weights, variance estimates and correlations. The evaluation of the structural model, based on fitting indices, regression weights and P-values are discussed below.

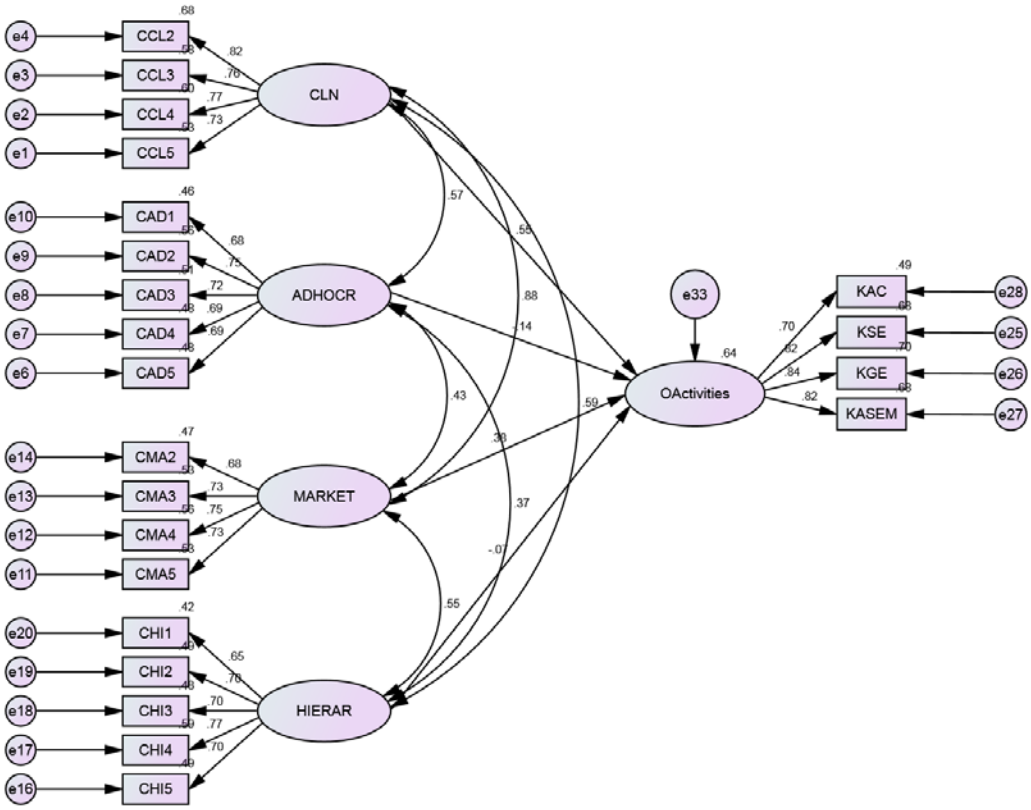

Figure 4-4 : Structure model of second hypothesis

Source: Author,

To evaluate the appropriateness of the fitted model, the researcher should refer to the table of fitting indices (Table 4-5) and table of the regression weights (Table 4-6).

Table 4-5:

Fitting indices of second hypothesis structure model

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default Model	54	253.917	199	.005	1.276	.040	.930	.983	.030
Saturated model	253	.000	0			.000	1.000	1.000	
Independence model	22	3369.241	231	.000	14.585	.391	.262	.000	.212

Source: Author,

Table 4-5 shows the goodness of fit indices for the structure model of the second hypothesis. It illustrated (χ^2 = 253.917, df = 199, P =. 005, N =302). The GFI = 0.930 and, CFI = 0.983, RMSEA = 0.030, CMIN/DF= 1.27. Though the chi-square is significant, these values indicate that this model fits adequately to the data.

Table4-6:

Regression weights of second hypothesis structure model

	Regression Weights: (Group number 1 - Default model)					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
OActivities ← CV	**1.091**	**.138**	**7.881**	*******	**Part_6**	**.779**
OActivities ← CLN	.398	.133	2.984	.003	par_24	.548
OActivities ← ADHOCR	-.110	.055	-1.984	.047	par_25	-.137
OActivities ← MARKET	.290	.121	2.392	.017	par_26	.383
OActivities ← HIERAR	-.060	.052	-1.140	.254	par_27	-.074

Source: Author,
Significant Level *<0.1, **<0.05, ***<0.001

Table 4-6 displays the regression weight of the structure model. The maximum likelihood procedure is used to estimate regression weights or unstandardized coefficient estimates. Moreover, with each estimate, standardized regression

coefficient, a standard error (S.E.) and a critical ratio (C.R.) value are also presented. Each of these estimations helps us to understand the extent of the fitness and acceptable structure model. The critical ratio can test the significance of the path coefficients. Although fitting indices indicate that the model fits adequately to the data, however, each sub hypothesis have different P-values and significance. Based on Table 4-6, hypothesis H2b, the significant relationship between hierarchical value and OA, is rejected (P-value= 0.254 >0.05). Therefore, there is not enough evidence to support the significant effect of hierarchical value on OA of KC. The other sub hypothesis of the research question, which is the effect of clan, adhocracy and market on OA, is accepted because P-values are less than 0.05.

In order to test the main hypothesis of the relation between CV and OA by AMOS software, CV constructs were loaded on one factor (CV) and the path coefficient weight is estimated. Based on the standardised regression weight and P-value of the relation between CVF and KCM, presented in Table 4-6, there is a positive significant relationship between CVF and OA of KCM.

In order to modify the structure model, the researcher should refer to modification indices estimations. Based on the modification indices, to improve the fitting indices for the model presented in this section, the error terms e14 and e19 can be linked (M.I.= 9.213 and Par Change= 0.136).

The evaluation of the model will be based on the standard regression weight and fitting indices. The estimated standardised regression weights and C.Rs do not change much. The change in P-value is at most 0.002, which do not change the result of the considered sub-hypotheses. Therefore, the results of the modified model are the same as the model presented in section 4.3.1. The fitting indices verify that the two models fit the data well. Consequently, modified model is ignored.

4.5 Competing Values and Organisational Performance

The structure model and the hypothesis testing for organisational performance will be considered in this section. In the previous sections, the constructs of the measurement model were evaluated and it is shown that the model fitted adequately to the data. The second stage of the analysis, which is studying the structure model and testing the related hypotheses, is scrutinized here. This section deals with the fifth research question "What is the effect of the competing value on organisational performance in the firms?". To clarify the effect of the competing values on organisational performance, the structural model can be utilized to find out which of the competing value constructs have a direct effect on organisational performance in the proposed model. The four causal paths, which their significance is tested using structural equation modelling, are presented in Table 4-7. These hypotheses were represented as H5a, H5b, H5c and H5d to determine the relationships between competing value constructs and organisational performance.

Table 4-7:

Fifth hypothesis

Hypotheses No.	**Hypotheses**
H5: Competing Value Organisational Performance	**Competing values has a positive relationship with organisational performance.**
H5a: Clan → Organizational Performance	Clan has a positive relationship with organisational performance.
H5b: Hierarchy → Organizational Performance	Hierarchy has a positive relationship with organisational performance.
H5c: Adhocracy → Organizational Performance	Adhocracy has a positive relationship with organisational performance.
H5d: Market → Organizational Performance	Market has a positive relationship with organisational performance.

Source: Author

4.5.1 Structural Model: Testing of the Hypotheses

Figure 4-5 shows the path diagram of the fifth hypothesis, the significant effect of competing values on organisational performance. The standardized regression beta weights, variance estimates and correlations are presented in this figure.

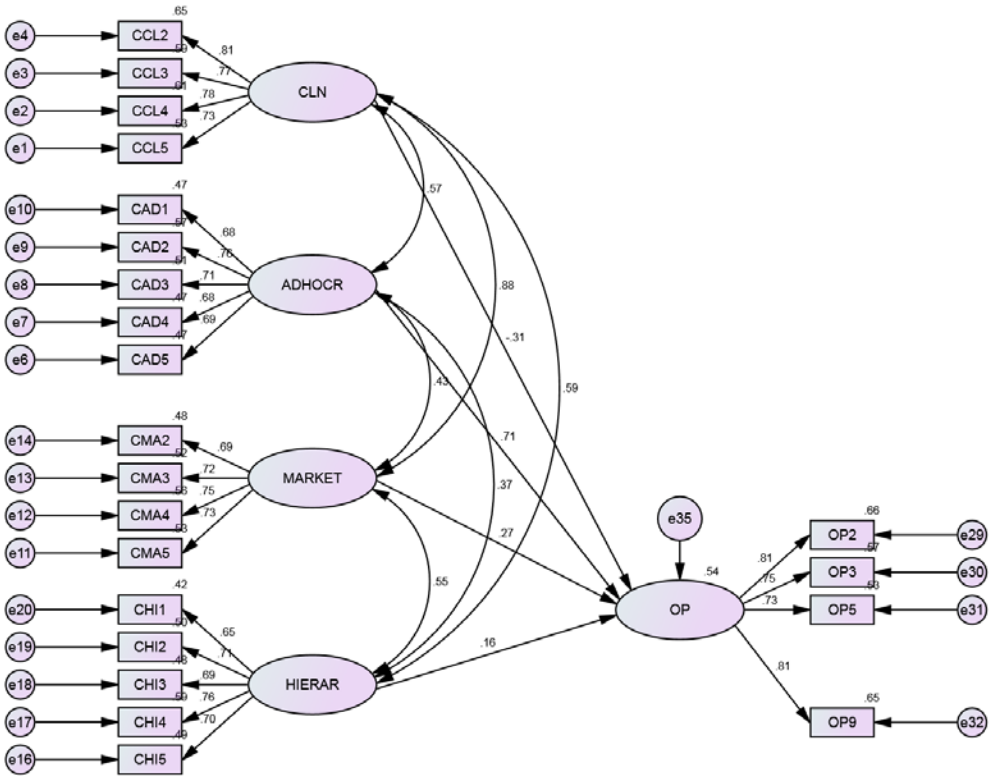

Figure 4-5 : Structure model of fifth hypothesis

Source: Author

The structural model is evaluated based on the fitting indices and the regression weights. The fitting indices show the appropriateness of the considered structure model and the values are presented in Table 4-8.

Table 4-8:

Fitting indices of fifth hypothesis structure model

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default Model	54	243.218	199	.018	1.222	.045	.933	.985	.027
Saturated model	253	.000	0			.000	1.000	1.000	
Independence model	22	3219.042	231	.000	13.935	.43	.280	.000	.207

Source: Author

Table 4-8 shows that goodness of fit indices for structure model or hypothesis testing with regression weights. It illustrated (χ^2 = 243.218, df = 199, P =. 018, N =302). The GFI = 0.933 and, CFI = 0.985, RMSEA = 0.027, CMIN/DF= 1.222. The significance of chi-square value and other fitting indices illustrate that this model fits has an adequate fit to the data.

Table4-9:

Regression weights of the fifth hypothesis structure model

	Regression Weights: (Group number 1 - Default model)					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
OP ← CV	**.901**	**.122**	**7.366**	***		**.507**
OP ← CLN	-.380	.258	-1.474	.141	par_24	-.306
OP ← ADHOCR	.990	.132	7.492	***	par_27	.709
OP ← MARKET	.353	.238	1.482	.138	par_25	.270
OP← HIERAR	.229	.103	2.212	.027	par_26	.164

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

Table 4-9 shows unstandardized and standardized regression weights, C.R. and P-values related to the fifth hypothesis testing. Each sub-hypothesis would be accepted if CR is in the acceptable range ($> \pm 1.96$) and the P-values less than 0.05.

As mentioned before, the chi-square value and the values of fitting indices indicate that the model fits adequately to the data. But, different P-values and C.R.'s leads to different conclusions about the effect of competing value constructs on organisational performance. Based on Table 4-9, the relationship between clan and market values and organisational performance are insignificant (P-value= 0.141 and P-value= 0.138, respectively). Therefore, there is not enough evidence to support the hypothesis of the significant effect of clan and market values on organisational performance. Considering C.R. and P-values, the significant relationships between hierarchy and adhocracy values with organizational performance are accepted so, these two values have significant positive influence on organisational performance. This table also presents the standardised regression weight along with P-value and C.R. for the relation between CVF and OP. These values certify the availability of a positive significant relationship between CVF and OP.

Referring to modification indices, the structural model can be adjusted to improve the goodness of fit of the model. The modification indices' suggestion is to link the error terms e14 and e19 to improve the model fit (M.I.= 8.223 and Par Change= 0.128). The resulted model is evaluated by comparing the standard regression weight and fitting indices before and after modification. The estimated standardised regression weights and C.R.s do not change much. The change in P-value connected with the regression weights is at most 0.007, which do not change the result of the considered sub-hypotheses. Moreover, the fitting indices do not support the improvement of the model strongly. Therefore, the results of the modified model are the same as the model presented in section 4.4.1 and the modified model is ignored.

4.6 Summary

This chapter presented the results of the direct effect of competing values on management and organizational activities and organizational performance. In chapter three, the data were prepared and analysed descriptively. In the next step, the measurement models were formed and each measurement model was analysed and respecified separately to access the proper fitting indices. This chapter was concern about the step that must be taken after measurement model. This step consists of the structural equation modelling in order to test the first, second and fifth hypotheses of the research. Regarding to the first research question, Table 4-10 shows the summary of results.

Table 4-10:

Competing value and management activities

Research Question 1: There is a significant relationship between competing value and management activities of KC?		
Hypothesis 1: There is a significant relationship between competing value and management activities of KC? **Sub-hypothesis**: H1a: There is a significant relationship between clan value and management activities of KC. H1b: There is a significant relationship between hierarchy value and management activities of KC. H1c: There is a significant relationship between adhocracy value and management activities of KC. H1d: There is a significant relationship between market value and management activities of KC.		
Hypothesised Paths	**Path Coefficient**	**Support**
CV → MA of KC	**.498**	**Yes**
Clan → MA of KC	-.043	No
Hierarchy → MA of KC	.051	No
Adhocracy → MA of KC	.675	Yes
Market → MA of KC	.095	No

Source: Author

The first hypothesis, which was seeking for the significant relationship between competing values and management activities, included four sub hypothesis. Based on structure model the clan value has no significant relationship with management

activities. Therefore, the result pointed out that in the scope of Iranian service firms, internal tendency and lower control would not significantly influence management activities of knowledge chain, which is consisted of knowledge leadership, control, coordination and measurement activities. The second sub hypothesis, looked for hierarchical value's relationship with management activities, was not supported based on the significant level of P-value ($P > 0.05$). The third sub hypothesis, that tried to find out adhocracy value's influence on management activities, was supported based on the significant level of P-value ($P < 0.001$). Thus, it pointed out that, in Iranian service firms, external focus and flexible relationship has a significant coordination with knowledge management activities. In other words, service firms, seeking for innovation, which is closely tight with adhocracy value, had a significant influence on MA of KC. The last sub hypothesis of the first hypothesis was not supported based on level of P-value significant ($P > 0.05$). This result points out that market values with the external focus and high control in Iranian service firms has no specific correlation with knowledge management activities of KC. In brief, the results showed three of the four path coefficients (clan, hierarchy and market) were not supported, but the relationship between adhocracy and MA of KC is significant and positive. Besides the path coefficient between CV and MA, shows the positive significant relationship between CVF and MA of KCM.

With regard to the second research question, Table 4-11 illustrates the summary of results

Table 4-11:

Competing value and organisational activities

Research Question 2: There is a significant relationship between competing value and organisational activities of KC.		
Hypothesis 2: There is a significant relationship between competing value and organisational activities of KC **sub-hypothesis:** H2a: There is a significant relationship between clan value and organisational activities of KC. H2b: There is a significant relationship between hierarchy value and organisational activities of KC. H2c: There is a significant relationship between adhocracy value and organisational activities of KC. H2d: There is a significant relationship between market value and organisational activities of KC.		
Hypothesised Paths	**Path Coefficient**	**Support**
CV→ OA of KC	**.779**	**Yes**
Clan→ OA of KC	.548	Yes
Hierarchy → OA of KC	-.074	No
Adhocracy → OA of KC	-.137	Yes
Market → OA of KC	.383	Yes

Source: Author

The results of testing hypothesis of the relationship between competing values and organisational activities shows that the first sub-hypothesis, i.e., clan value has a significant relationship with OA of KC, is accepted. In this case in, Iranian service firms with internal organisational environment tendency and low control has correlation with organisational activities of KC. The second sub hypothesis, which is looking for the significant relationship between hierarchy value and OA in KCM, was not supported. Therefore, high control and internal tendency in Iranian service firms has no correlation with organisational activities of knowledge chain.

The third sub hypothesis testing the relationship between adhocracy and OA of KC, that was supported based on level of P-value significant ($P > 0.05$). This result pointed out that adhocracy would negatively influence OA of KC. The sub hypothesis of significant relationship between market and OA of KC, was also supported ($P < 0.05$). Therefore, the relationship between market values, with internal tendency and high

control would be positive on OA of KC. In short, the results showed, except hierarchy value, the other three path coefficients were supported and there were significant relationships between clan, adhocracy and market values with OA of KC. Moreover, the positive significant relationship between CVF and OA is confirmed, by the path coefficient and significant level $P < 0.001$.

Table 4-12 represents the summary of the findings of the fifth research question.

Table 4-12:

Summary of competing values and organisational performance

Research Question 5: There is a significant relationship between competing values and organisational performance		
Hypothesis 5: There is a significant relationship between competing values and organisational performance **Sub-hypothesis:** H5a: There is a significant relationship between clan value and OP. H5b: There is a significant relationship between hierarchy value and OP. H5c: There is a significant relationship between adhocracy value and OP. H5d: There is a significant relationship between market value and OP.		
Hypothesized Paths	**Path Coefficient**	**Support**
CV → OP	**.507**	**Yes**
Clan → OP	-.306	No
Hierarchy → OP	.164	Yes
Adhocracy → OP	.709	Yes
Market → OP	.270	No

Source: Author

The results of the fifth hypotheses testing for the existence of a significant relationship between CV and OP revealed that the data do not provide enough evidence to support the first sub hypothesis. Therefore, the relationship between clan value and OP in this research is insignificant. The second sub hypothesis, the significant relationship between hierarchy value and OP, was supported based on the significant level of P-value. Consequently, hierarchy value would positively influence OP.

The significant relationship between adhocracy and OP was supported, and thus, it has a positive influence on OP. The last sub hypothesis of fifth research question, was not supported and the significance of the relationship between market value and OP can be put in doubt. In summary, the results showed two of the four path coefficients were supported and two of the path coefficients were not supported. Therefore, there are significant positive relations between hierarchy and adhocracy values and OP and there is no relationship between clan and market values and OP. Finally, considering the path coefficient and P-value of the relation between CVF and OP, it can be concluded that the relationship between these two constructs are significant.

CHAPTER FIVE

ANALYSIS OF KNOWLEDGE CHAIN

5.1. Introduction

In this chapter, the structural equation modelling with AMOS 20 software is applied to test the effect of knowledge chain model on organisational performance. As mentioned in chapter four, the measurement model was evaluated to achieve satisfactory of fit (Anderson & Gerbing, 1988; Cunningham et al., 2006; Kline, 2005). Therefore, this chapter deals with the third and fourth questions of the research. As presented in Table 5.1, these hypotheses were represented in the theoretical framework as H3 and H4 to determine the relationship between the constructs under consideration of MA on OA and KCM on OP, respectively.

Table 5-1:

Third and fourth hypotheses

Hypotheses No.	**Hypotheses**
H3: Management Activity → Organisation Activity	**Management activity has a significant relationship with organisational activity.**
H4: Knowledge Chain Model → rganisational Performance	**Knowledge Chain Model has a significant relationship with organisational performance**
H4a : Organizational Activities → Organisational Performance	Organisation activity has a significant relationship with organisational performance.
H4a : Management Activities → Organisational Performance	Management activity has a significant relationship with organisational performance

Source: Author

5.2. Structural Model: Testing of Hypotheses

The figure 5-1 shows the structure model of the management and organisational activities in the knowledge chain model. This model was tested by Holsapple in 2000. In this research, this model is tested in service firms of Iran

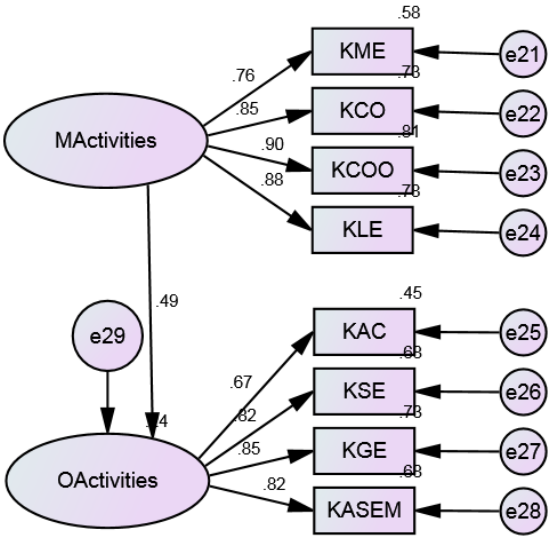

Figure 5-1: Structure model of third hypothesis

Source: Author

Table 5-2 shows fitting indices of the third hypotheses, which is evaluating the relationship between management and organisational activities of knowledge chain. According to this table, the fitting indices are in the acceptable range and the model fits the data adequately well.

Table 5-2:

Fitting indices of third hypothesis structure model

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default Model	17	36.475	19	.009	1.920	.022	.969	.988	.055
Saturated model	36	.000	0			.000	1.000	1.000	
Independence model	8	1543.839	28	.000	55.137	.335	.356	.000	.424

Source: Author

The path diagram, shown in Figures 5-2, considers the standardized regression beta weights, for the paths between MA and OA, MA and OP and, finally, OA and OP. The evaluation of the structural model, considered in this Figure, is based on fitting indices and unstandardized and standardized Regression weights, C.R. and P-value.

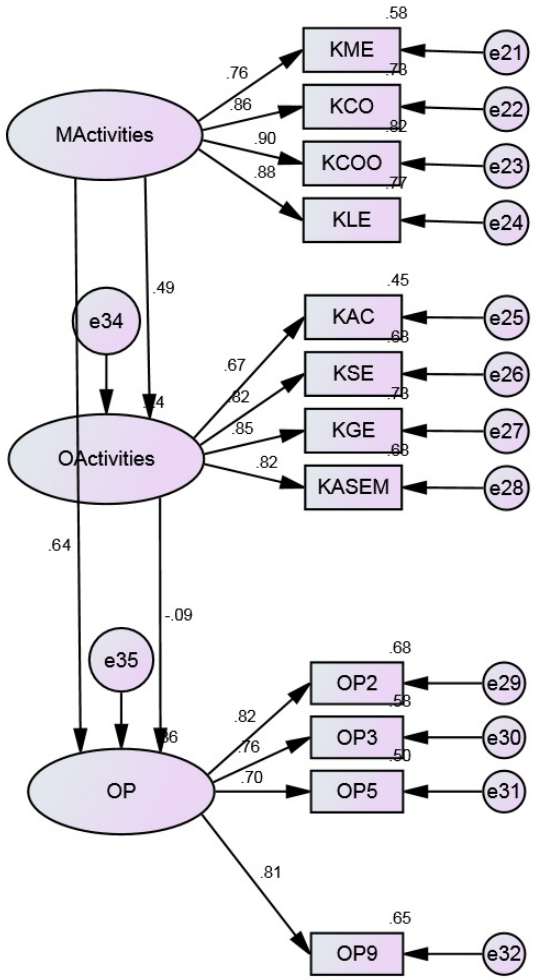

Figure 5-2 : Structure model of fourth hypothesis

Source: Author

The fitting indices, which evaluate the goodness of the fit of the model displayed in Figure 5-2, are presented in Table 5-3.

Table 5-3:

Fitting indices of fourth hypothesis structure model

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default Model	27	60.537	51	1.69	1.187	.026	.967	.996	.025
Saturated model	78	.000	0			.000	1.000	1.000	
Independence model	12	2190.69	66	.000	33.192	.414	.329	.000	.327

Source: Author

Table 5-3 shows that goodness of fit indices for this structure model. It illustrated (χ^2 = 60.537, df = 51, P =. 000, N =302). The GFI = 0.967 and, CFI = 0.996, RMSEA = 0.025, CMIN/DF= 1.69. Hence the fitting indices are significant; these values indicate the adequacy of the fitted model to the data.

Table 5-4:

Regression weights of third and fourth hypotheses structure model

	Regression Weights: (Group number 1 - Default model)					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
OActivities ← MActivities	**.477**	**.069**	**6.909**	*******	**par_10**	**.486**
OP ← KCM	**1.055**	**.120**	**8.792**	*******	**Par_7**	**.583**
OP ← OActivities	-.156	.121	-1.286	.199	par_11	-.085
OP ← MActivities	1.142	.137	8.356	***	par_12	.638

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

The regression weights of the model are presented in Table 5-4. The standardised path coefficients related to hypothesis H3 (MA → OA) and H4 (OA → OP) are 0.486 and 0.583, respectively. The P-values for these two relations are less than 0.05 and

consequently, the data support the significant effect of management activities on organisational activities and knowledge chain model on performance

Moreover, Table 5-4 presents the standardised path coefficients related to sub-hypothesis H4a (OA → OP) and H4b (MA → OP), which are -0.083 and 0.638, respectively. The P-value for the relation between management activities and organisational performance is less than 0.001, which demonstrates the significant effect of management activities on organisational performance. However, the relation between organisational activities and organisational performance can be disputed because of its P-value ($P > 0.1$) and C.R. (< 1.28). Considering KCM as an independent random variable, the hypothesis H4 is confirmed as significant because of the P-value ($P < 0.001$).

5.3. Overall Model

To study the relations in the theoretical framework more accurately, the direct relations considered in chapters four and five in separate hypothesis are examined in the model displayed in Figure 5-3

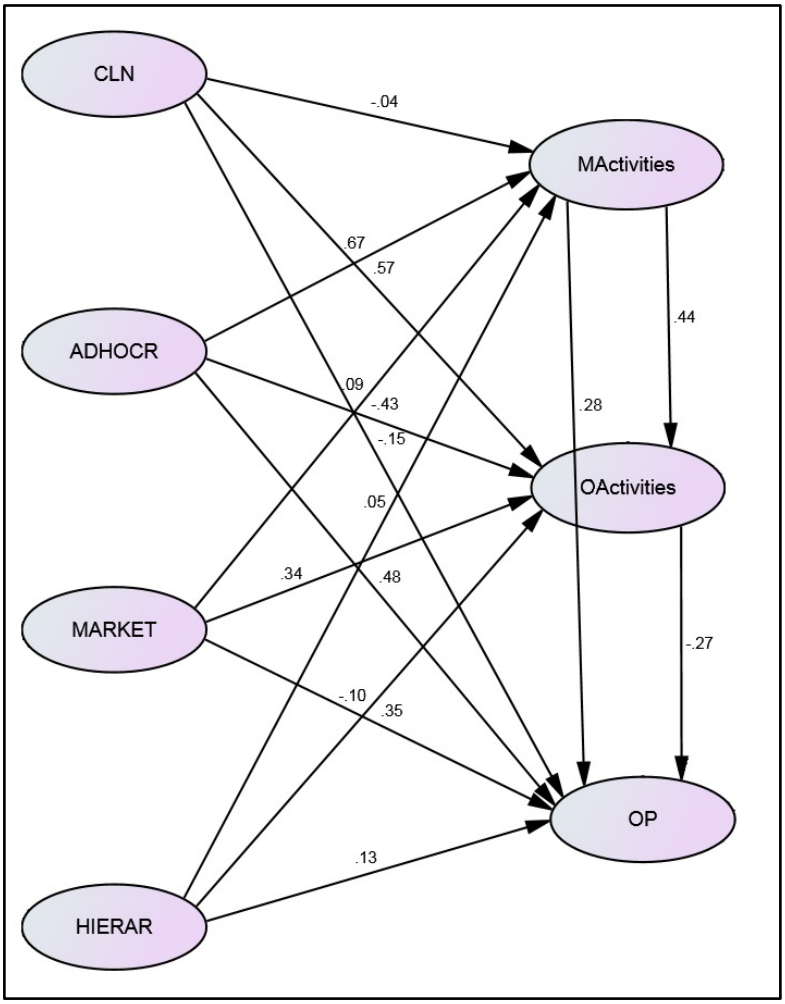

Figure 5-3 : Total structure model

Source: Author

The fitting indices of total structural model are presented in Table 5-5. These indices are in the ranges mentioned in section 3.9.6 which indicates that the model fits adequately.

Table 5-5 :

Fitting indices for the total structure model

	CMIN					**RMR, GFI**		**Baseline Comparison**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
Default Model	81	511.637	384	.000	1.332	.042	.899	.974	.033
Saturated model	465	.000	0			.000	1.000	1.000	
Independence model	30	5356.963	435	.000	12.315	.384	.218	.000	.194

Source: Author

Based on P-values and C.R., in table 5-6 some relations are not significant. These relations include the clan, market and hierarchy values with management activities, hierarchy with organizational activities and clan value with organisational performance.

Table 5-6:

Regression weights of the total structure model

	Regression Weights: (Group number 1 - Default model)					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
MActivities ← CLN	-.026	.136	-.190	.849	par_32	-.036
MActivities ← ADHOCR	.530	.071	7.442	***	par_34	.674
MActivities ← MARKET	.066	.125	.525	.599	par_36	.089
MActivities ← HIERAR	.041	.055	.752	.452	par_38	.052
OActivities ← MActivities	.453	.082	5.513	***	par_30	.439
OActivities ← CLN	.414	.133	3.105	.002**	par_33	.565
OActivities ← ADHOCR	-.352	.079	-4.472	***	par_35	-.434
OActivities ← MARKET	.264	.118	2.230	.026**	par_37	.345
OActivities ← HIERAR	-.078	.051	-1.525	.127	par_39	-.096
OP ← OActivities	-.461	.230	-2.003	.045**	par_31	-.269
OP ← CLN	-.185	.275	-.671	.502	par_40	-.147
OP ← ADHOCR	.672	.183	3.677	***	par_41	.482
OP ← MARKET	.457	.238	1.922	.055*	par_42	.348
OP ← HIERAR	.181	.102	1.765	.077*	par_43	.129
OP ← MActivities	.494	.192	2.569	.010**	par_44	.279

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

With regard of eliminating these relations from the path diagram, results in the final model in Figure 5-4

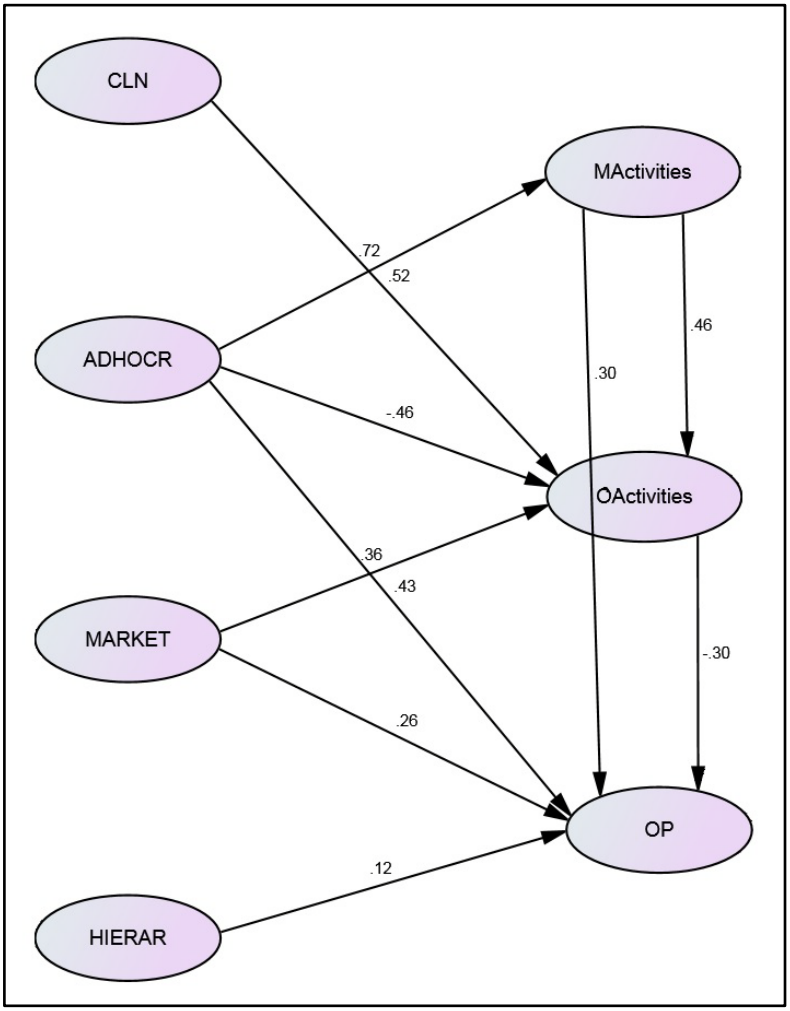

Figure 5-4 : Final model

Source: Author

The standardised regression weights are displayed on Figure 5-4. Based on these standardized regression weights, it can be seen that adhocracy value has a positive impact on MA. This shows that the more the value in the service firm tends to adhocracy; it leads to the higher MA. Moreover, this research shows that, clan, adhocracy and market values have an impact on OA. The standardized regression weights confirm that the more the service firm tends to clan or market value, the more

the OA are, and if the service firm tends to adhocracy value, the OA decrease in the firm. Besides, the clan value has greater impact on OA. Finally, this model can deeply explore the degree of competing values' effect on organisational performance. The results show that the more the organizational value tends to adhocracy, the higher the organizational performance is; the more the organizational value tends to hierarchy, the higher the organizational performance is; the more the organizational value tends to market, the higher the organizational performance is, and adhocracy has greater impact on organizational performance.

5.4. Summary

This chapter was dealt with research question three and four and testing the related hypotheses, correspondingly. For this purpose the structural equation modelling was used.

Table 5-7 illustrates the finding of the third and fourth research questions.

Table 5-7:

Knowledge chain activities and organisational performance

Research Question 3: There is a statistical relationship between management and organisational activities of KC.		
Hypothesis 3: There is a significant relationship between management activities and organisational activities.		
Hypothesised Paths	Path Coefficient	Support
MA of KC → OA of KC	0.486	Yes
Research Question 4: There is a statistical relationship between knowledge chain model and organisational performance.		
Hypothesis 4: There is a significant relationship between knowledge chain model and organisational performance. H4a: There is a significant relationship between organisational activities and organisational performance. H4b: There is a significant relationship between management activities and organisational performance.		
Hypothesised Paths	**Path Coefficient**	**Support**
OP ← KCM	.583	Yes
OA of KC → OP	-.085	No
MA of KC → OP	.638	Yes

Source: Author

The values of fitting indices demonstrate that the model shows an adequate fit to the data. The standardized regression weights and the P-values show that management activities have a positive influence on organisational activities. Therefore, in Iranian service firms the management activities can support organisational activities of knowledge chain.

Besides, in this chapter the relation between KCM and OP is hypothesised. Although the effect of organisational activities on organisational performance can be put in doubt, based on the data of this research, the positive effect of management activities on organisational performance is confirmed. In other words, the acquisition, selection, generation and assimilation of OA cannot affect organisational performance. On the other hand, all activities of knowledge chain as one variable can effects on OP based on P-value < 0.001 with C.R.= 8.792. It shows that the effects of management activities are large enough to cover and support OA for promoting OP.

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CHAPTER SIX

ANALYSIS OF THE MEDIATION EFFECTS

6.1 Introduction

In chapters four and five, the relationship between competing values and management and organisational activities of knowledge chain and organisational performance are studied. This chapter studies and analyses the mediating relationships. The first mediating effect, studies the relationship between competing values and organisational activities. In this case, the management activities are considered as the mediators. The second one is testing the mediating role of KCM between competing values and organisational performance.

6.2 The Mediation of Management Activities

The analysis of the mediation effect is done in three steps. First, it tests the direct effect of competing values on organisational activities. Second, the indirect effects of competing values on organisational activities through management activities is tested and, finally, the mediating effect with over all path coefficients is studied by Amos. In addition, to confirm the existence of mediating effect, the Sobel test is applied (see table 6-3). As it is shown in Figure 6-1 and table 6-1, direct effect tests the relationship between competing values and organisational activities, allocating zero to the indirect path coefficients. In order to test indirect effects, the direct path coefficients fix as zero, see table 6-1, and the indirect effect is studied. Finally, the mediating effects, in the presence of direct and indirect paths, are presented. Based on different mediation forms, which are introduced in section 3.9.7 and figure 3-4, the form of mediation effect will be determined.

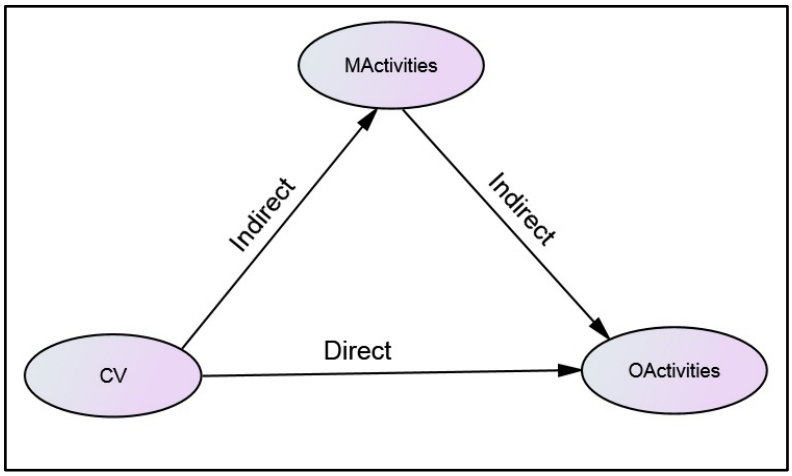

Figure 6-1 Mediating effect of management activities

Source: Author

As it is mentioned earlier (see section 3.9.7.1), decision about mediation effect is made based on the significance of path coefficients in the direct, indirect and mediate model. Table 6-1 shows the path coefficients in the mentioned models.

Table 6-1:

Regression weights of sixth hypothesis structure model

	Regression Weights					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
Direct Model						
MActivities ← CV	.000				u0	.000
OActivities ← MActivities	.000				w0	.000
OActivities ← CV	.819	.077	10.610	***	v0	.779
Indirect Model						
MActivities ← CV	.562	.071	7.907	***	u0	.526
OActivities ← MActivities	.507	.069	7.298	***	w0	.513
OActivities ← CV	.000				v0	.000
Mediate Model						
MActivities ← CV	.512	.068	7.524	***	u0	.492
OActivities ← MActivities	.139	.057	2.450	.014**	w0	.137
OActivities ← CV	.753	.080	9.386	***	v0	.712

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

Based on Table 6-1, the direct relation (OA ← CV), indirect relation (MA ← CV and OA ← MA) and all the relation in the mediate model, are significant. This makes us conclude that MA partially mediate the relation between CV and OA (Figure 3-4).

Table 6-2:

Comparisons assuming model mediation

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Direct Model	2	78.257	.000	.033	.034	.037	.038
Indirect Model	1	129.051	.000	.055	.056	.067	.069

Source: Author

Table 6-2 shows the comparison between the direct and indirect models with mediate model, which confirms that the mediate model is preferred to direct and indirect models. This research also applies Sobel test to testify the mediating effect of MA. This statistic is used to test whether the indirect effect of CV on OA through MA, as a mediator, is significantly different from zero. Table 6-3 shows the result of the Sobel test. The P-value ($p < 0.05$) verifies the existence of the mediating effect.

Table 6-3:

Sobel test foe management activities

	Test Statistics	S.E.	P-value
Sobel Test	3.49205631	0.02962381	0.00047932

Source: Author

Based on AMOS outputs, the total effect of CV on OA of knowledge chain, which is 0.779, can be divided into direct and indirect effects. Based on the standardised regression weights presented in Table 6-1, the direct effect of CV on OA is 0.712 and the indirect effect of CV on OA through MA is 0.492*0.137= 0.067. Comparison of the

direct and indirect effect shows that a relatively small portion of effect of CV on OA is mediated by MA.

6.3 Extra Results: Effects of Management Activities

This section is devoted to the mediation effect of management activities between competing values constructs and organisational activities for the sub hypotheses of the sixth research question, which is presented in chapter Two. The sub hypothesis test has three steps, as mentioned before. In what follows, direct, indirect and mediating models with their regression weights are presented in order. The mediation form will be determined by considering the significance of regression weights and the steps taken in Figures 3-4 and 3-5. Besides, the fitting indices are used to compare these models. Figure 6-2 shows the structure model of the tested hypothesis.

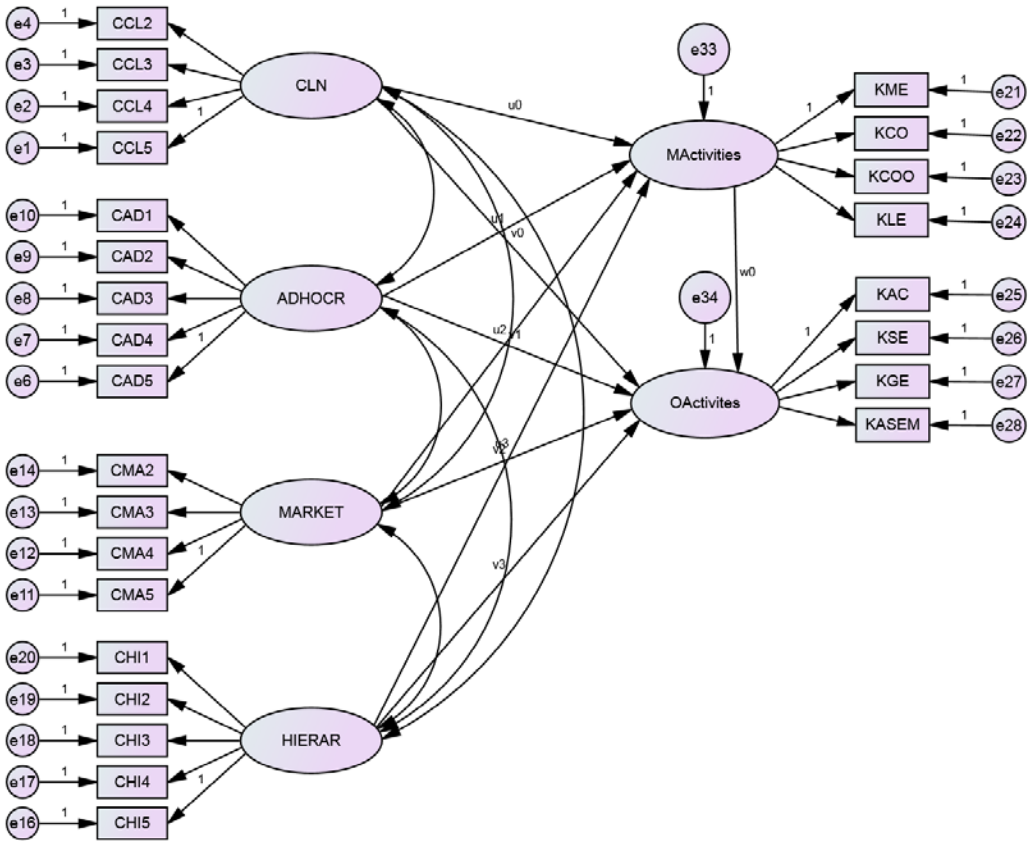

Figure 6-2 : Structure model of sixth hypothesis

Source: Author

In Figure 6-2, the paths from competing value constructs to management activities are named u0, u1, u2 and u3, the path from management activities to organisational activities is termed w0 and the paths from competing value constructs to organisational activities are named v0, v1, v2 and v3.

Table 6-4:

Fitting indices of sixth hypothesis structure model

	CMIN					**RMR, GFI**		**Baseline Comparison**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
direct model	62	589.502	289	.000	2.040	.146	.880	.929	.059
indirect model	63	573.424	288	.000	1.991	.109	.882	.932	.057
mediating model	67	394.963	284	.000	1.391	.040	.907	.974	.036
Saturated model	351	.000	0			.000	1.000	1.000	
Independence model	26	4544.86	325	.000	13.984	.367	.233	.000	.208

Source: Author

Table 6-4 shows the goodness of fit indices for direct, indirect and mediating models. Based on fitting indices direct, indirect and mediating models can be compared, which shows that the mediating effect model has better fitting indices. Therefore, this model is preferred to direct and indirect models. In the mediating model (χ^2 = 394.963, DF = 284, P =. 000, N =302). The GFI = 0.907 and CFI = 0.974, RMSEA = 0.036, CMIN/DF= 1.391. Based on these indices, the mediation model fits the best to the data than direct and indirect models.

In fact, allocating u0, u1, u2, u3 and w0 as zero, the direct model (the effect of competing values on organisational activities) will be tested. Table 6-5 shows the regression weights for direct relationship between competing value constructs and organisational activities.

Table 6-5:

Regression weights of direct model effect of CV on OA

	Regression Weights: (Group number 1 - Direct model)					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
MActivities ← CLN	.000				u0	.000
MActivities ← ADHOCR	.000				u1	.000
MActivities ← MARKET	.000				u2	.000
MActivities ← HIERAR	.000				u3	.000
OActivites ← CLN	.398	.133	2.984	.003	v0	.548
OActivites ← ADHOCR	-.110	.055	-1.984	.047	v1	-.137
OActivites ← MARKET	.290	.121	2.392	.017	v2	.383
OActivites ← HIERAR	-.060	.052	-1.140	.254	v3	-.074
OActivites ← MActivities	.000				w0	.000

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

The regression weights along with their C.R. and P-value and the standardized regression weights (factor loadings) are presented in Table 6.5. Except the hierarchy value, all of the regression weights between competing values and organisational activities are significant, based on the critical ratio test ($> \pm 1.96$, $p < 0.05$).

In the next step, setting v0, v1, v2 and v3 as zero, the indirect effect of competing values on organisational activities through management activities will be examined.

Table 6-6:

Regression weights of indirect model effect CV on OA

	Regression Weights: (Group number 1 - Indirect model)					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
MActivities ← CLN	-.010	.132	-.072	.942	u0	-.014
MActivities ← ADHOCR	.513	.070	7.356	***	u1	.651
MActivities ← MARKET	.081	.123	.663	.508	u2	.110
MActivities ← HIERAR	.038	.054	.699	.484	u3	.048
OActivites ← CLN	.000				v0	.000
OActivites ← ADHOCR	.000				v1	.000
OActivites ← MARKET	.000				v2	.000
OActivites ← HIERAR	.000				v3	.000
OActivites ← MActivities	.488	.069	7.126	***	w0	.479

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

Table 6-6 shows the regression weights for indirect model. The only significant path from competing values to management activities belongs to adhocracy. The regression weights between management activities and organisational activities prove the existence of a significant relation.

In the mediating model or default model, all of the path coefficients are considered, i.e. the default values for u0, u1, u2, u3, w0, v0, v1, v2 and v3 are not utilized as zero. Table 6-7 shows the regression weight for this model.

Table 6-7:

Regression weight of mediate model effect CV on OA

	Regression Weights: (Group number 1 - Mediate model)					Standardized Regression Weights
	Estimate	S.E.	C.R.	P	Label	Estimate
MActivities ← CLN	-.027	.134	-.201	.840	u0	-.038
MActivities ← ADHOCR	.528	.070	7.509	***	u1	.674
MActivities ← MARKET	.067	.124	.545	.586	u2	.091
MActivities ← HIERAR	.041	.054	.749	.454	u3	.051
OActivites ← CLN	.413	.130	3.176	.001	v0	.566
OActivites ← ADHOCR	-.349	.078	-4.498	***	v1	-.435
OActivites ← MARKET	.261	.117	2.226	.026	v2	.343
OActivites ← HIERAR	-.078	.051	-1.527	.127	v3	-.095
OActivites ← MActivities	.452	.081	5.563	***	w0	.440

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

The regression weights along with their C.R. and P-value and the standardized regression weights (factor loadings) are presented in Table 6.7. Just one of the regression weights between competing values and management activities is significant based on the critical ratio test ($> \pm 1.96$, $p < 0.05$). Other regression weights are not significant which shows that the indirect effect of competing values on organisational activities is just through Adhocracy value.

Table 6-8:

Comparisons assuming model mediation

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Direct Model	5	194.539	.000	.043	.046	.046	.050
Indirect Model	4	178.461	.000	.039	.042	.043	.046

Source: Author

Using the nested model comparisons statistics, Table 6-8, it can be observed that subtraction of the mediation model and the indirect model chi-squares (394.963-573.424) results in the chi-square value difference of 178.461. This value, with four degrees of freedom (67-63), is significant at the level of 0.05. Besides, subtraction of the mediation model and the direct model's chi-square values leads to a chi-square value difference of 194.539, which is also significant at the level of 0.05, with 5 degrees of freedom. Thereby, despite the considered models fit the data relatively well, the fitting indices indicate that the mediation model has a better fit to the data than direct and indirect model, and it is preferred, which shows that knowledge management mediates the relation between competing values and organisational activities partially.

6.4 Study the Mediation Effect of Knowledge Chain Activities

This section deals with the mediating effect of KCM between CV and OP. The three steps mentioned in section 6.2, direct, indirect and mediating model testing, followed in this section. Moreover, the existence of mediating effect is confirmed by using the Sobel test (see table 6-11). As it is shown in Figure 6-3 and table 6-9, direct effect tests the relationship between CV and KCM with allocating zero to the indirect path coefficients (CV-KCM and KCM-OP). In order to test indirect effects, the direct path coefficient sets as zero (CV-OP), see table 6-9, and the indirect effect is studied. Finally, the mediating effects, exists when there are direct and indirect paths simultaneously.

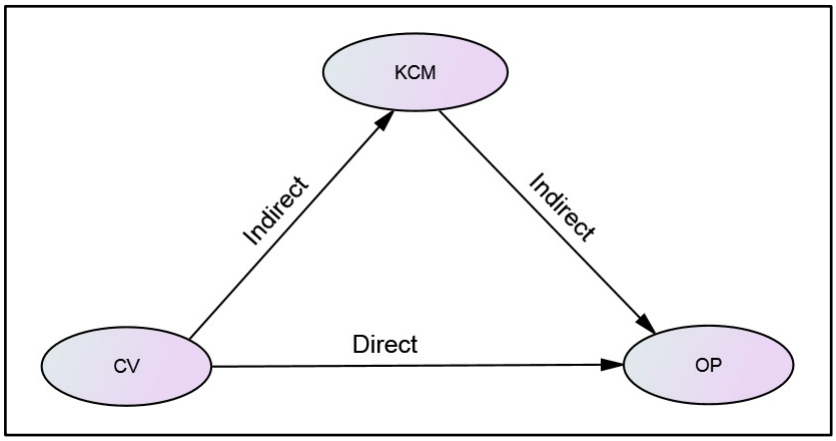

Figure 6-3 : Mediation of knowledge chain model

Source: Author

The criteria for resolving the mediate effect of KCM in the relation between CV and OP are the significance of path coefficients in the direct, indirect and mediate model. Table 6-9 shows the path coefficients in the mentioned models.

Table 6-9:

Mediation effect of KCM

	Regression Weights					**Standardized Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
Direct Model						
KCM ← CV	.000				u0	.000
OP ← KCM	.000				w0	.000
OP ← CV	.948	.126	7.534	***	v0	.507
Indirect Model						
KCM ← CV	.426	.066	6.461	***	u0	.608
OP ← KCM	1.610	.250	6.432	***	w0	.591
OP ← CV	.000				v0	.000
Mediate Model						
KCM ← CV	.419	.066	6.361	***	u0	.604
OP ← KCM	.491	.144	3.421	***	v0	.425
OP ← CV	1.166	.246	4.738	***	w0	.258

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

Based on Table 6-9, the direct relation (OP ← CV), indirect relation (KCM ← CV and OP ← KCM) and mediate model relations are all significant. Considering relations mentioned in Figure 3-4, it can be inferred that KCM partially mediate the relation between CV and OP.

Table 6-10:

Comparison assuming model mediation

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
Direct Model	2	145.273	.000	.047	.049	.048	.050
Indirect Model	1	11.306	.001	.004	.004	.001	.001

Source: Author

The direct and indirect models are compared with mediate model in Table 6-10. This table shows that the mediate model is preferred to direct and indirect models. To certify the mediating effect of KCM, this research applies Sobel test. Based on Table 6-10, the P-value of this test, which is less than 0.05, shows that the indirect effect of the CV on the OP via KCM is significantly different from zero.

Table 6-11:

Sobel test for knowledge chin model

	Test Statistics	S.E.	P-value
Sobel Test	4.20580531	0.14104552	0.00002620

Source: Author

Based on standardised regression weights presented in Table 6-9, the total effect of CV on OP is 0.515. This total effect can be divided into direct and indirect effects which are 0.258 and 0.604*0.425=0.257, respectively. This shows that direct and

indirect effects are equally effective on the total effect of CV on OP and the effect of CV on OP is partially mediated by KCM.

6.5 Extra Results of Knowledge Chain Mediation

This section considers the mediation effect of knowledge chain model between competing values and organisational performance, which is the seventh hypothesis studied in this research. The three steps of testing mediation effects are mentioned in sections 6.2 and more explanation about the mediating was explained in section 3.9.7.1. Direct, indirect and mediating models with their regression weights are presented in what follows. The significance of regression weights, along with steps taken in Figures 3-4 and 3-5, will help to determine the form of mediation effect. Moreover, the best model is chosen considering the fitting indices. The structural model of the tested hypothesis is shown in Figure 6-4.

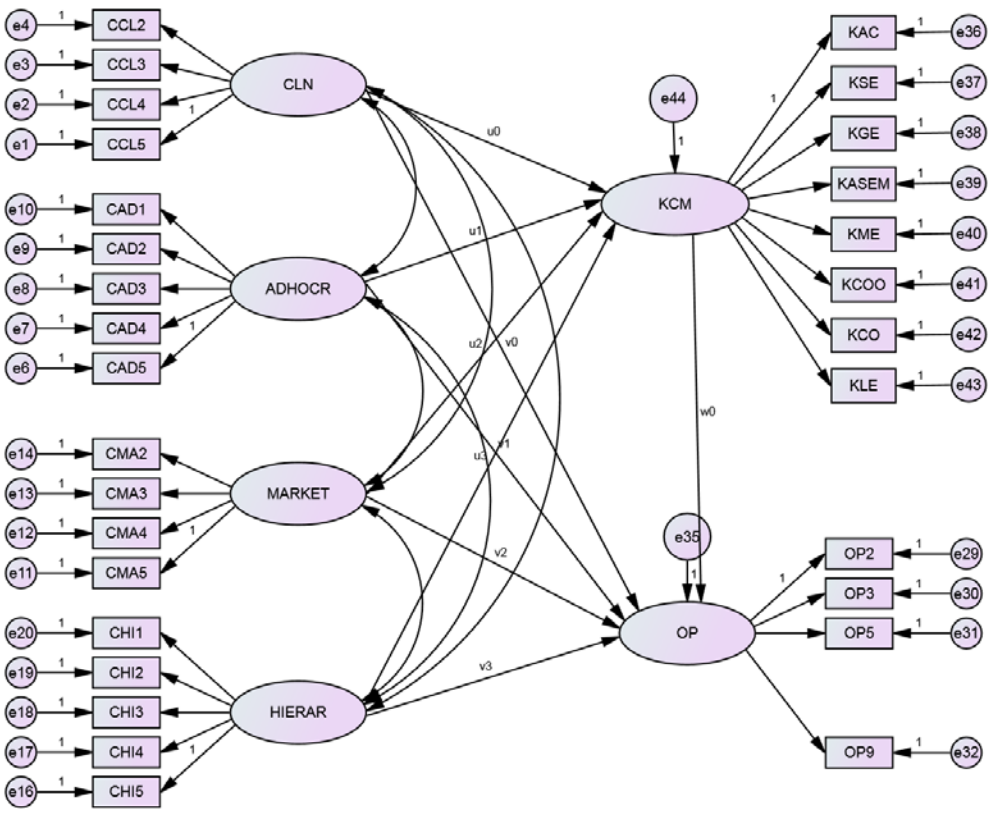

Figure 6-4: Structure model of seventh hypothesis

Source: Author

As can be seen in Figure 6-4, all knowledge activities loaded on one variable called KCM. In order to see the results of direct effect, it assumes that the values of u0, u1, u2 and u3 are equal to zero in structure model. Then, to test the results of indirect model it should nominate v0, v1, v2 and v3 as zero.

Table 6-12:

Fitting indices of seventh hypothesis structure model

	CMIN					**RMR, GFI**		**Baseline Comparisons**	**RMSEA**
Model	NPAR	CMIN	DF	P	CMIN/DF	RMR	GFI	CFI	RMSEA
direct model	70	1323.652	395	.000	3.351	.201	.743	.811	.088
indirect model	71	1197.500	394	.000	3.039	.111	.748	.837	.082
mediate model	75	1142.262	390	.000	2.929	.096	.754	.847	.080
Saturated model	465	.000	0			.000	1.000	1.000	
Independence model	30	5356.963	435	.000	12.315	.384	.218	.000	.194

Source: Author

Table 6-12 shows the goodness of fit indices for, direct, indirect and mediating models or hypothesis testing of the seventh research question. It illustrated that in the mediating model (χ^2 =1142.262, DF= 390, P =. 000, N =302). The GFI = 0.754, and CFI = 0.847, RMSEA = 0.080, CMIN/DF= 2.929. Based on these indices, the mediation model fits better than direct and indirect.

Table 6-13:

Regression weights of direct model effect CV on OP

	Regression Weights: (Group number 1 - Direct model)					**Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
KCM ← CLN	.000				u0	.000
KCM ← ADHOCR	.000				u1	.000
KCM ← MARKET	.000				u2	.000
KCM ← HIERAR	.000				u3	.000
OP ← KCM	.000				w0	.000
OP ← CLN	-.380	.258	-1.474	.141	v0	-.306
OP ← ADHOCR	.990	.132	7.492	***	v1	.709
OP ← MARKET	.353	.238	1.482	.138	v2	.270
OP ← HIERAR	.229	.103	2.212	.027	v3	.164

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

The standardized regression weights of the direct model are presented in Table 6.13. Based on C.R.'s and P-values of the path coefficients, it can be concluded that adhocracy and hierarchy values have direct effects on organisational performance, but the direct effect of clan and market values can be put in doubt.

Table 6-14:

Regression weights of indirect model effect CV on OP

	Regression Weights: (Group number 1 - Indirect model)					**Regression Weights**
	Estimate	S.E.	C.R.	P	Label	Estimate
KCM ← CLN	.017	.079	.220	.826	u0	.040
KCM ← ADHOCR	.303	.055	5.558	***	u1	.613
KCM ← MARKET	.073	.074	.976	.329	u2	.157
KCM ← HIERAR	.022	.033	.666	.506	u3	.044
OP ← KCM	1.741	.275	6.324	***	w0	.611
OP ← CLN	.000				v0	.000
OP ← ADHOCR	.000				v1	.000
OP ← MARKET	.000				v2	.000
OP ← HIERAR	.000				v3	.000

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

The path coefficients related to the indirect model are studied in Table 6-14. The positive effect of adhocracy value on KCM and KCM on organisational performance indicates the significance of indirect path between adhocracy value and organisational performance through KCM. The other indirect paths are not significant due to insignificant path coefficient between clan, adhocracy and market with KCM.

Table 6-15:

Regression weights of mediate model effect CV on OP

	Regression Weights: (Group number 1 – Mediate Model)					Regression Weights
	Estimate	S.E.	C.R.	P	Label	Estimate
KCM ← CLN	.029	.082	.350	.726	u0	.065
KCM ← ADHOCR	.295	.054	5.456	***	u1	.588
KCM ← MARKET	.067	.077	.872	.383	u2	.143
KCM ← HIERAR	.017	.033	.517	.605	u3	.035
OP ← KCM	.393	.238	1.652	.098	w0	.141
OP ← CLN	-.385	.252	-1.529	.126	v0	-.309
OP ← ADHOCR	.876	.152	5.776	***	v1	.624
OP ← MARKET	.321	.235	1.369	.171	v2	.245
OP ← HIERAR	.222	.102	2.180	.029	v3	.158

Source: Author
Note: Significant Level *<0.1, **<0.05, ***<0.001

The mediate model is studied by considering the value of path coefficients. The standardized regression weights (factor loadings), C.R. and P-values are presented in Table 6-15. Based on Figure 3-4, the significant effect of adhocracy value on KCM shows the partial mediating effect KCM between adhocracy and organizational performance. The direct and indirect models are compared with the mediate model in Table 6-16.

Table 6-16:

Comparison assuming mediate model

Model	DF	CMIN	P	NFI Delta-1	IFI Delta-2	RFI rho-1	TLI rho2
direct model	5	181.391	.000	.034	.037	.034	.037
indirect model	4	55.238	.000	.010	.011	.009	.010

Source: Author

Regarding the model comparisons presented in Table 6-16, it can be seen that although all the models show relatively adequate fit, the mediation model represents significantly better fits, and it is preferred to direct and indirect models, which shows that KCM mediate the competing values and organisational activities partially.

6.6 Summary

Table 6-17 shows the findings summary of sixth and seventh research questions.

Table 6-17:

Findings of sixth and seventh hypotheses

Research Question 6: Does MA of KCM mediate the relationship between OA and CV?	
Hypothesis 6: MA of KCM mediates the relationship between OA and CV.	
Hypothesised Paths	**Conclusion**
MA of KCM as a mediator on CV → OA of KCM	Supported
Research Question 7: **Dose KCM mediates the relationship between CV and OP?**	
Hypothesis 7: KCM mediates the relationship between CV and OP.	
Hypothesised Paths	**Conclusion**
KC as a mediator on CV → OP	Supported

Source: Author

Regarding the summary of the relationships, Figure 3-4 is used to test the mediating effect of MA of KC on the relation between CV and OA of KC and the P-value and standardized regression weights in Tables 6-1, 6-5, 6-6 and 6-7 are considered, respectively. Studying the mediating effects of management activities for the relations between competing values constructs and organisational activities shows that the management activities can mediate the effects of adhocracy on organisational activities of knowledge chain partially. Besides, negative direct and positive mediating effect

results in competitive mediating effect of MA of KC on the relationship between adhocracy value and OA of KC. Moreover, there is a direct relationship between clan and market values with organisational activities of knowledge chain and there is no relation between hierarchy and organisational activities.

With regard to the steps mentioned in Figure 3-4, the mediating effect of KCM in the relationship between CV and OP is tested the and the P-value and standardized regression weights of the indirect and direct models are considered in Tables 6-9, 6-13 and 6-14 and 6-15, respectively. The results show that KCM mediates the relationship between CV and OP. In more details, the mediation effect of KCM between CV constructs and OP can be illustrated as KCM mediates partially the relationship between adhocracy and OP. Besides, positive direct and indirect effect results in complementary mediating effect of KCM on the relationship between adhocracy value and OP. Moreover, it can be seen that there is no relationship between clan and market value with OP. Besides, hierarchical value has positive direct effects on organisational performance.

CHAPTER SEVEN

CONCLUSIONS AND IMPLICATIONS

7.1 Introduction

Having examined the analytical issues involving the relationship between competing values, management activities and organizational performance, we now seek to draw implications for theory and policy in this chapter. In doing so, we also provide a synthesis of the findings, and limitations of the current study and recommendations for future research. The rest of the chapter is organized as follows. Section two presents the synthesis of findings. Section three discusses the implications for theory, policy and businesses. Section four presents the limitations of this study and recommendations for future research.

7.2 Synthesis

This thesis produced three analytical chapters with strong links to theory in general, but in particular with the related management literature reviewed in chapter two. We summarize these findings in Table 7.1.

Chapter 4 dealt with the direct effect of competing values on management activities, organizational activities and organizational performance (see also Table 7.1). The results show that, though, adhocracy value is the only value with direct effect on management activities of the knowledge chain, the significant relationship between competing values and these activities is supported by the data. Moreover, among different values in the competing value framework, the direct effect of hierarchy value on organisational activities is rejected with other competing values instead supporting these activities. Consequently, the results support the significant relationship between

competing values and organisational activities of the knowledge chain. Finally, despite the presence of a significant relationship between adhocracy and hierarchy values and organisational performance, the same cannot be said of the relationship between clan and market values, and organisational performance. Nevertheless, the results show that competing values have a strong influence on organisational performance.

Chapter five examined hypotheses three and four (see Table 7.1). The third hypothesis analysed the relationship between management activities and organisational activities of the knowledge chain model, while the fourth hypothesis analysed the relationship between the knowledge chain model and organisational performance. Although the results confirm a significant relationship between management activities and organisational performance, there is not enough evidence to support the effect of organisational activities on organisational performance. Overall, the results show that the knowledge chain model is an influential factor on organisational performance.

Chapter 6 examined the mediating effects of the model by testing two hypotheses (see Table 7.1). The results show that management activities have a mediating effect on the relationship between competing values and organisational performance. In addition, the results also confirm the mediating effect of the knowledge chain model on the relationship between competing values and organisational performance.

The regression results presented in Table 7.1also shows that MA has a positive impact on OA and that organizational performance is influenced by MA and OA of KCM. This research illustrates that the more the MA of an organization, the more its OP. However, OA influences OP negatively.

Table 7-1:

Synthesis of Results, Service Firms, Iran, 2010

Hypothesis	Supported
H1: There is a significant relationship between competing value and management activities of KC.	Yes
H1a: There is a significant relationship between clan value and management activities of KC.	No
H1b: There is a significant relationship between hierarchy value and management activities of KC.	No
H1c: There is a significant relationship between adhocracy value and management activities of KC.	Yes
H1d: There is a significant relationship between market value and management activities of KC.	No
H2: There is a significant relationship between competing value and organizational activities of KC.	Yes
H2a: There is a significant relationship between clan value and organisationalactivities of KC.	Yes
H2b: There is a significant relationship between hierarchy value and organisational activities of KC.	No
H2c: There is a significant relationship between adhocracy value and organisational activities of KC.	Yes
H2d: There is a significant relationship between market value and organisational activities of KC.	Yes
H3: There is a statistical relationship between management activities and organisational activities.	Yes
H4: There is a statistical relationship between knowledge chain model and organisational performance.	Yes
H4a: There is a significant relationship between organisational activities and organisational performance.	No
H4b: There is a significant relationship between management activities and organisational performance.	Yes
H5: There is a significant relationship between competing values and organisational performance.	Yes
H5a: There is a significant relationship between clan value and OP.	No
H5b: There is a significant relationship between hierarchy value and OP.	Yes
H5c: There is a significant relationship between adhocracy value and OP.	Yes
H5d: There is a significant relationship between market value and OP.	No
H6: MA of KCM mediate the relationship between OA and CV.	Yes
H7: KCM mediates the relationship between CV and OP.	Yes

Source: Author

7.3 Implications of the Study

Having provided the synthesis of the findings, we discuss their implications for theory, policy and business in this section. The subsequent sub-sections draw implications for theory, policy and businesses.

7.3.1 Implications for Theory

The evidence from Iranian service firms may be unique to the country's settings, but theories are supposed to allow generalizability, and hence, we subject the literature reviewed in chapter 2 for scrutiny. The first contribution of this study is in filling the void in the lack of past studies examining the relationship between competing values and knowledge chain model, though; some researchers have studied the relationship between organizational culture and knowledge management activities (see summary in chapter two). In addition, this study developed a theoretical model for evaluating the impact of competing values, knowledge chain model and organizational performance through the construction of one single model.

Furthermore, this research analysed the mediating effect of the knowledge chain model on the relationship between competing values and organisational performance, which was aimed at assessing the influence of knowledge chain activities on the relationship between competing values and organisational performance. In addition, the applied theoretical model helped us to show the mediation effect of management activities on the relationship between competing values and organisational activities. We summarize the contributions in Table 7.2. Furthermore, based on resource based view, which is a supportive theory applied in this thesis, this model shows that competing values and knowledge chain, as intangible resources of the service firms in Iran, have the capability to promote organisational performance.

Table 7-2:

Research contribution, hypothesis 1

Research Question	Main and Sub-Hypothesis	Prior Empirical Research	Research Finding
Is there a significant relationship between CV and MA in KCM?	H1: There is a significant relationship between competing values and management activities of KC.	To Some Extent	Positive Significant Relation
	H1a: There is a significant relationship between clan value and management activities of KC.	To Some Extent	No Relation
	H1b: There is a significant relationship between hierarchy value and management activities of KC.	No	No Relation
	H1c: There is a significant relationship between adhocracy value and management activities of KC.	To Some Extent	Positive Significant Relation
	H1d: There is a significant relationship between market value and management activities of KC.	To Some Extent	No Relation

Source: Author

The significant relationship between CV and MA in KCM is supported by qualitative analysis undertaken in chapter four, which is consistent with the findings ofLawson (2003) and Omerzel et al, (2011) that competing values have a strong relationship with management activities in knowledge chain. The importance of adhocracy value is also supported by previous studies (see the summary of chapter two), which shows no relationship between this value and knowledge management. However, there is no relationship between clan and market values and management activities owing to the inability of Iranian service firms to compete in the global market. The majority of service neither exported any services, nor imported any inputs from the global market because of international sanctions (see Table 7.2). As a theoretical contribution to service firms of Iran, it can be concluded that clan value has the capability to promote intangible resources for competitive advantages such as performance.

Table 7.3:

Reserch contribution, hypothesis 2

Research Question	Main and Sub-Hypothesis	Prior Empirical Research	Research Finding
Is there a significant relationship between CV and OA in KCM?	H2: There is a significant relationship between competing values and organisational activities of KC.	To Some Extent	Positive Significant Relation
	H2a: There is a significant relationship between clan value and organisational activities of KC.	To Some Extent	Positive Significant Relation
	H2b: There is a significant relationship between hierarchy value and organisational activities of KC.	No	No Relation
	H2c: There is a significant relationship between adhocracy value and organisational activities of KC.	No	Negative Significant Relation
	H2d: There is a significant relationship between market value and organisational activities of KC.	To Some Extent	Positive Significant Relation

Source: Author

The second hypothesis examined the relationship between CV and organisational or primary activities of knowledge chain model (see Table 7.3). The positive and significant relationship between competing values and organisational activities supports the findings by Liao et al. (2012). The positive and significant relationship found between clan and organisational activities supports the findings by Suppiah and Sandhu (2011) and Liao et al. (2012). The influence of hierarchy value on organisational activities is also consistent with the findings of Suppiah and Sandhu (2011) and Liao et al. (2012), while adhocracy showed a negative relationship with organisational activities of the knowledge chain. These results show that Iranian service firms are not actively engaged in innovative and creative activities to support organisational activities of the knowledge chain. Although some studies show the absence of any relationship between adhocracy and knowledge management (e.g. Omerzel et al. (2011), other studies show that there is a positive relationship between the two (e.g. Liao et al. (2012). These differences suggest that the type and existence of a

relationship between adhocracy and knowledge management depends on the organisation.

Table 7-4:

Research contribution, hypothesis 3

Research Question	Main Hypothesis	Prior Empirical Research	Research Finding
Is there a significant relationship between MA and OA in KCM?	H3: There is a significant relationship between management and organisational activities of KC.	Yes	Positive Significant Relation

Source: Author

The third hypothesis dealt with the relationship between management activities and organizational activities in the knowledge chain model (see Table 7.4). The positive and significant relationship between management activities and organizational activities support the findings of Holsapple and Singh (2001). Based on organisational theory, each organisation accumulates all recourses in order to obtain their goals and objectives with tangible and intangible recourses. In this case, management and organisational activities of knowledge chain model has great role in supporting each other in order to promote intangible assets, such as knowledge, to attain the organisational goals.

Table 7-5:

Research contribution, hypothesis 4

Research Question	Main and Sub-Hypothesis	Prior Empirical Research	Research Finding
Is there a significant relationship between KCM and OP in the firms?	H4: There is a significant relationship between KCM and OP.		Positive Significant Relation
	H4a: There is a significant relationship between organisational activities and organisational performance		No Relation
	H4b: There is a significant relationship between managerial activities and organisational performance.		Positive Significant Relation

Source: Author

The fourth hypothesis examined the relationship between knowledge chain model and organisational performance. The research results indicate that, although organisational performance is not influenced by organisational activities directly, when the knowledge chain model is viewed jointly as one model with management and organisational activities, it has a positive influence on organisational performance (see Table 7.5). The positive relationship between the knowledge chain model and organizational performance supports the findings of Holsapple and Singh (2001) and Holsapple et al. (2007) who argued that each of knowledge chain activities is important to raise competitiveness organizational performance. According to organisational theory, the competitive advantage and organisational performance goals are the central alignment activities. In this case knowledge chain model has great alignment for promoting performance in Iranian service firms.

Table 7-6:

Research contribution, hypothesis 5

Research Question	Main and Sub-Hypothesis	Prior Empirical Research	Research Finding
Is there a significant relationship between CV and MA in KCM?	H5: there is a significant relationship between competing values and organisational performance.	To Some Extent	Positive Significant Relation
	H5a: There is a significant relationship between clan value and organisational performance.	Negative	No Relation
	H5b: There is a significant relationship between hierarchy value and organisational performance.	Negative	Positive Significant Relation
	H5c: There is a significant relationship between adhocracy value and organisational performance.	Positive	Positive Significant Relation
	H5d: There is a significant relationship between market value and organisational performance.	Positive	No Relation

Source: Author

The fifth hypothesis examined the link between competing values and organisational performance (see Table 7.6). The results indicate that among the four constructs of competing values, past studies showed that adhocracy enjoyed a positive link with organisational performance, while hierarchy had a negative relationship with

organizational performance (Zhang and Zhao, 2012). Our study showed a positive relationship between hierarchy and organisational performance, which indicates that service firms in Iran are following a restricted and insular approach. The findings on Iranian service firms are not consistent with Zhang and Zhao (2012) perhaps because of the lack of international competition. Government subsidies may also explain why these results are different from past studies. Nevertheless, our findings support the findings of Zhang and Zhao (2012) on the positive relationship between clan and organisational performance. According to contingency theory, each circumstance has its own contingence. If the situation has changed, the outcome would change. In this research question, contingency theory is confirmed by various possible conditions of competing values. If the clan and hierarchy value were dominated in the organisation, there is no support for performance in service firms. However, if the adhocracy and market values were dominated in the organisation, they could support and enhance the organisational performance.

Table 7-7:

Research contribution, hypothesis 6

Research Question	Main Hypothesis	Prior Empirical Research	Research Finding
Does MA of KCM mediate the relationship between OA and CV?	H6: MA of KCM mediates the relationship between OA and CV		Yes

Source: Author

The sixth research question is whether management activities have mediating effects between organisational activities of knowledge chain and competing values. Although there is no empirical research in this relation, in Hollsopple model seen the organisational and management activities in one model. In this study, find out the

mediating effects of management activities of knowledge chain between competing values and organizational activities. Considering the resource based view, management activities mediate the knowledge practices and promote the intangible resources in service firms in Iran.

Table 7-8:

Reserch contribution, Hypothesis 7

Research Question	Main Hypothesis	Prior Empirical Research	Research Finding
Does KCA mediate the relationship between CV and OP?	H7: KCM mediates the relationship between CV and OP	Supported	Yes

Source: Author

The last research question examined the mediating effect of KCM on the relationship between competing values (CV) and organizational performance (OP). The results demonstrate that KCM partially mediates the relationship between CV and OP. These findings relate to studies by Zheng et al. (2010) and Haque and Anwar (2012). Zheng et al (2010) analysed the mediating effect of knowledge management in the relationship between organisational factors (culture, structure and strategy) and organisational effectiveness., which showed that knowledge management fully mediated the relationship between organisational culture and organisational effectiveness with culture being the most influential organisational factors on knowledge management. Meanwhile, Haque and Anwar (2012)showed the mediating effect of knowledge creation and sharing in the relationship between organisational culture and organisational performance. Thus, our study substantiated past findings on the positive mediating effect of the knowledge chain model on the relationship between competing values and organisational performance. It shows that the knowledge chain

model can positively affect the relationship between competing values and organisational performance. According to resource based view, knowledge chain model promotes competing values as an intangible resource for organisational performance.

7.3.2 Implications for Policy

By conceptualizing KCM as an organisational construct, this study analysed the relationships and performance of the knowledge chain model in Iranian service firms. Previous studies put more emphasis on developed countries' enterprises, while neglecting work on and the developing economies. Therefore, this research would be a valuable practical contribution for Iranian service firms and will offer the opportunity for policy makers to recognize the importance of knowledge management practices' in service firms. In other words, the field of knowledge chain management, which is relatively new and it is growing, can be adapted fast to take account of the specific environment facing firms in the developing countries. Therefore, policy makers can target Iranian service firms so as to focus on values produced by organisations in the country for knowledge chain activities. They can adapt adhocracy values for management activities and clan, market values for organisational activities of knowledge chain. In addition, the analysis of knowledge chain activities in Iranian service firms for the first time can help policy makers to identify the types of organisational values that stimulate knowledge management practices among service firms in Iran.

The results recorded under turbulent environment and uncertainty faced by service firms in Iran support the resource based and contingency theories, and as a consequence can contribute to policy makers to deal with turbulent environmental and uncertainty issues. Any move in this direction can help bolster technological capabilities, and conduct of firms to face competitors better. The results show that policies to stimulate

knowledge chain activities will assist Iranian service firms to compete and raise their organizational performance levels.

The government can use the results to encourage new studies on knowledge chain management in different sectors so as to expand its jurisdiction of advocacy to support improvements in organisational performance across Iran. Given the capacity of national governments' efforts can also be taken to improve the quality of the model used to generate better results on the significance of the mediating effects on the relationship between competing values and organization performance. Human capital planning in the country can also improve with the expansion of such studies.

7.3.3 Implication to Business

The results also generate implications for business firms in Iran, and similar developing countries. The KCM model can assist managers to identify and use the CV framework to target strategies for improving organizational performance. It can unravel the dominant values of organizations, especially those that positively affect knowledge management activities. Clan value supports management activities of knowledge chain, which in turn, will lead to more employment satisfaction, investment return and growth market share. In this case, with clan value, there is more cohesiveness between employees. Therefore, the environment of the organisation focuses on internal resource and flexibility.

Additionally, knowledge chain activities can be implemented in public and private businesses. From the diagnostic standpoint, firms can first identify the current values and how they have affected knowledge management and organization performance. They can then work towards improving organizational performance by targeting on competing values and knowledge management activities. From a strategic long-term perspective, firms can develop knowledge chain road-maps to manage the progression of their activities towards desired goals.

Furthermore, from the angle of diagnostics, the results show that hierarchy and adhocracy values can affect OP, directly, and that adhocracy influences OP through KCM. In addition, clan, market and adhocracy can also influence on organisational activities. However, adhocracy is the only competing value that has had an impact on management activities in the knowledge chain of Iranian service firms**.** Efforts of businesses in Iran to understand the weaknesses and strengths of service firms' competing values will help them construct better strategies to practice knowledge management. It will also help explain why hierarchy values in service firms influence strongly OP in Iranian service firms.

Firms can also strengthen their strategic management practices, although, only at the national level, the best performers for benchmarking purposes. The range of competing values and management activities that produce the best organizational performance can benchmarked for lessons that inferior performers among the Iranian service firms can look to raise their own performance. Firms can establish plans that they can constantly upgrade to strengthen values and management activities (including knowledge chain activities) targeted at raising organizational performance. In other words, it can help managers to formulate plans transform their organisational values using the knowledge chain model to raise organisational performance.

7.4 Limitations and Recommendations for Future Study

Although the objectives of this study have generally been met, a number of issues remained. For example, we worked with cross-sectional data because the list of telecommunication centres located in the Ministry of ICT was not updated. Studying this model longitudinally will provide better and causal insights to compare changes in competing values and knowledge chain activities. Also, there was little information on the service firms for us to a use stratified sampling framework. Hence, the sample was drawn from a simple random sampling procedure. Hence, we recommend that a similar

study, but using more robust methodologies and using longitudinal data will help strengthen the arguments on the mediating effect management activities on the relationship between competing values and organization performance.

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APPENDICES

Appendix A: Statistic Tables

A.1 Univariate Statistics

Univariate Statistics					
	N	Mean	Std. Deviation	Missing	
				Count	Percent
CCL1	302	2.3079	1.16762	0	.0
CCL2	302	2.5331	1.23241	0	.0
CCL3	302	2.8046	1.19171	0	.0
CCL4	300	2.6133	1.14668	2	.7
CCL5	301	2.8206	1.18084	1	.3
CHI1	298	2.4463	1.17442	4	1.3
CHI2	301	2.3854	1.06348	1	.3
CHI3	301	2.5116	1.12132	1	.3
CHI4	299	2.5686	1.16340	3	1.0
CHI5	296	2.6419	1.13203	6	2.0
CAD1	301	2.5282	1.02796	1	.3
CAD2	297	2.7306	1.14262	5	1.7
CAD3	296	2.5101	1.04146	6	2.0
CAD4	301	2.5648	1.08318	1	.3
CAD5	290	2.5897	1.12562	12	4.0
CMA1	300	2.5267	1.15487	2	.7
CMA2	297	2.6397	1.22812	5	1.7
CMA3	299	2.4816	1.09399	3	1.0
CMA4	296	2.5270	1.06689	6	2.0
CMA5	299	2.5017	1.13627	3	1.0
KAC1	296	2.4358	1.09045	6	2.0
KAC2	299	2.5819	1.02771	3	1.0
KAC3	300	2.9567	1.17162	2	.7
KAC4	295	2.5695	1.08221	7	2.3
KSE1	301	2.2757	1.11372	1	.3
KSE2	301	2.6744	1.08027	1	.3
KSE3	302	2.4040	1.11872	0	.0
KSE4	299	2.4682	1.08444	3	1.0

Univariate Statistics					
	N	Mean	Std. Deviation	Missing	
				Count	Percent
KGE1	298	2.8121	1.10627	4	1.3
KGE2	300	2.4000	1.08501	2	.7
KGE3	299	2.2977	1.03059	3	1.0
KGE4	299	2.3846	1.00797	3	1.0
KASEM1	299	2.2642	1.11447	3	1.0
KASEM2	292	2.7089	.99528	10	3.3
KASEM3	300	2.4433	1.06642	2	.7
KASEM4	291	2.5739	1.01567	11	3.6
KEM1	299	2.5217	1.10916	3	1.0
KEM2	297	2.5253	1.03333	5	1.7
KEM3	297	2.6498	1.08675	5	1.7
KEM4	293	2.8396	1.07184	9	3.0
KME1	298	2.4899	1.10473	4	1.3
KME2	295	2.7220	1.03215	7	2.3
KME3	297	2.5455	1.10226	5	1.7
KME4	295	2.8712	1.06443	7	2.3
KCO1	301	2.4850	1.05385	1	.3
KCO2	295	2.5085	1.05580	7	2.3
KCO3	296	2.5000	1.07986	6	2.0
KCO4	297	2.3401	1.08219	5	1.7
KCOO1	299	2.4214	1.06642	3	1.0
KCOO2	301	2.5382	1.10877	1	.3
KCOO3	299	2.4047	1.13816	3	1.0
KCOO4	298	2.5034	1.06125	4	1.3
KLE1	299	2.5485	1.05558	3	1.0
KLE2	297	2.4983	1.06899	5	1.7
KLE3	292	2.4966	1.07613	10	3.3
KLE4	291	2.5223	1.07736	11	3.6
OP1	289	1.4810	.99677	13	4.3
OP2	298	2.8725	1.30675	4	1.3
OP3	299	2.8361	1.32220	3	1.0
OP5	299	2.9298	1.18651	3	1.0

Univariate Statistics					
	N	Mean	Std. Deviation	Missing	
				Count	Percent
OP6	297	1.6364	.96340	5	1.7
OP8	293	2.9659	1.21303	9	3.0
OP9	302	2.9007	1.32823	0	.0

Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

A.2 Pattern of Missing Data

Number of Cases		222	2	4	7	3	2	3	2	2
Missing Patterns	CCL1									
	CCL2									
	CCL3									
	KSE3									
	OP9									
	CHI2									
	CHI3									
	CAD1									
	CAD4									
	CMA1									
	KAC3									
	KAC2									
	KSE1									
	KGE2									
	KGE1									
	KGE3									
	KASEM3									
	KASEM1									
	KSE2									
	KCO1									
	KCOO2									
	CCL5									
	CCL4									
	KSE4									
	KLE1									
	KGE4									
	KCOO1									
	KCOO4									
	KCOO3									
	KME1									
	KEM1									
	CMA5									
	CAD3									
	KEM2									
	KEM3									
	KME2									

Number of Cases		222	2	4	7	3	2	3	2	2
	KME4									
	KME3									
	KLE2									
	KCO4									
	KCO3							*		
	CMA3									
	CHI4									
	OP3								*	
	OP5									
	OP6									
	CHI1									
	CAD2									
	KCO2									
	KAC4									
	KAC1									
	CMA2									
	CMA4									
	OP2		*							
	CHI5									*
	KEM4						*			
	KLE3									
	KASEM4									
	KLE4									
	KASEM2					*				
	OP8									
	OP1		*	*						
	CAD5				*					
Complete if ...[b]		222	229	226	229	225	224	225	224	224

A.3 Paired Sample Statistics (T-test)

	Paired Differences					t	Sig.(2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		
CCL4-SMEAN(CCL4)	.00256	.03141	.00181	-.00100	.00612	1.417	.158
CCL5-SMEAN(CCL5)	.00059	.01032	.00059	-.00057	.00176	1.000	.318
CHI1-SMEAN(CHI1)	.00733	.06340	.00365	.00015	.01451	2.010	.045
CHI2-SMEAN(CHI2)	.00204	.03537	.00204	-.00197	.00604	1.000	.318
CHI3-SMEAN(CHI3)	.00162	.02810	.00162	-.00157	.00480	1.000	.318
CHI4-SMEAN(CHI4)	.00429	.04286	.00247	-.00057	.00914	1.738	.083
CHI5-SMEAN(CHI5)	.00711	.05006	.00288	.00145	.01278	2.470	.014
CAD1-SMEAN(CAD1)	.00156	.02715	.00156	-.00151	.00464	1.000	.318
CAD2-SMEAN(CAD2)	.00446	.03443	.00198	.00056	.00836	2.251	.025
CAD3-SMEAN(CAD3)	.00973	.06847	.00394	.00198	.01749	2.470	.014
CAD4-SMEAN(CAD4)	.00144	.02504	.00144	-.00139	.00428	1.000	.318
CAD5-SMEAN(CAD5)	.01631	.08029	.00462	.00721	.02540	3.529	.000
CMA1-SMEAN(CMA1)	.00313	.03846	.00221	-.00122	.00749	1.417	.158
CMA2-SMEAN(CMA2)	.00596	.04605	.00265	.00075	.01118	2.251	.025
CMA3-SMEAN(CMA3)	.00515	.05150	.00296	-.00068	.01098	1.738	.083
CMA4-SMEAN(CMA4)	.00940	.06611	.00380	.00191	.01688	2.470	.014
CMA5-SMEAN(CMA5)	.00495	.04950	.00285	-.00066	.01056	1.738	.083
KAC1-SMEAN(KAC1)	.01121	.07886	.00454	.00228	.02014	2.470	.014
KAC2-SMEAN(KAC2)	.00415	.04153	.00239	-.00055	.00886	1.738	.083
KAC3-SMEAN(KAC3)	.00029	.00352	.00020	-.00011	.00069	1.417	.158
KAC4-SMEAN(KAC4)	.00998	.06489	.00373	.00263	.01733	2.673	.008
KSE1-SMEAN(KSE1)	.00240	.04168	.00240	-.00232	.00712	1.000	.318
KSE2-SMEAN(KSE2)	.00108	.01874	.00108	-.00104	.00320	1.000	.318
KSE4-SMEAN(KSE4)	.00528	.05282	.00304	-.00070	.01126	1.738	.083
KGE1-SMEAN(KGE1)	.00249	.02152	.00124	.00005	.00493	2.010	.045
KGE2-SMEAN(KGE2)	.00397	.04875	.00281	-.00155	.00949	1.417	.158
KGE3-SMEAN(KGE3)	.00698	.06977	.00401	-.00092	.01488	1.738	.083
KGE4-SMEAN(KGE4)	.00611	.06113	.00352	-.00081	.01304	1.738	.083
KASEM1-SMEAN(KASEM1)	.00731	.07309	.00421	-.00097	.01559	1.738	.083
KASEM2-SMEAN(KASEM2)	.00964	.05217	.00300	.00373	.01555	3.211	.001
KASEM3-SMEAN(KASEM3)	.00369	.04523	.00260	-.00143	.00881	1.417	.158
KASEM4-SMEAN(KASEM4)	.01552	.07996	.00460	.00647	.02458	3.373	.001
KEM1-SMEAN(KEM1)	.00475	.04751	.00273	-.00063	.01013	1.738	.083
KEM2-SMEAN(KEM2)	.00786	.06068	.00349	.00099	.01473	2.251	.025
KEM3-SMEAN(KEM3)	.00580	.04476	.00258	.00073	.01087	2.251	.025
KEM4-SMEAN(KEM4)	.00478	.02732	.00157	.00169	.00787	3.041	.003
KME1-SMEAN(KME1)	.00676	.05841	.00336	.00014	.01337	2.010	.045
KME2-SMEAN(KME2)	.00644	.04190	.00241	.00170	.01119	2.673	.008
KME3-SMEAN(KME3)	.00753	.05810	.00334	.00095	.01410	2.251	.025
KME4-SMEAN(KME4)	.00299	.01941	.00112	.00079	.00518	2.673	.008
KCO1-SMEAN(KCO1)	.00171	.02963	.00171	-.00165	.00506	1.000	.318
KCO2-SMEAN(KCO2)	.01139	.07408	.00426	.00300	.01978	2.673	.008
KCO3-SMEAN(KCO3)	.00993	.06989	.00402	.00202	.01785	2.470	.014
KCO4-SMEAN(KCO4)	.01093	.08435	.00485	.00137	.02048	2.251	.025
KCOO1-SMEAN(KCOO1)	.00575	.05748	.00331	-.00076	.01226	1.738	.083
KCOO2-SMEAN(KCOO2)	.00153	.02657	.00153	-.00148	.00454	1.000	.318

	Paired Differences					t	Sig.(2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		
KCOO3-SMEAN(KCOO3)	.00591	.05914	.00340	-.00078	.01261	1.738	.083
KCOO4-SMEAN(KCOO4)	.00658	.05687	.00327	.00014	.01302	2.010	.045
KLE1-SMEAN(KLE1)	.00449	.04485	.00258	-.00059	.00956	1.738	.083
KLE2-SMEAN(KLE2)	.00831	.06412	.00369	.00104	.01557	2.251	.025
KLE3-SMEAN(KLE3)	.01667	.09023	.00519	.00645	.02689	3.211	.001
KLE4-SMEAN(KLE4)	.01740	.08964	.00516	.00725	.02755	3.373	.001
OP1-SMEAN(OP1)	.06539	.30882	.01777	.03042	.10036	3.680	.000
OP2-SMEAN(OP2)	.00169	.01460	.00084	.00004	.00334	2.010	.045
OP3-SMEAN(OP3)	.00163	.01628	.00094	-.00022	.00347	1.738	.083
OP5-SMEAN(OP5)	.00070	.00698	.00040	-.00009	.00149	1.738	.083
OP6-SMEAN(OP6)	.02258	.17429	.01003	.00284	.04231	2.251	.025
OP8-SMEAN(OP8)	.00102	.00581	.00033	.00036	.00168	3.041	.003

A.4 The Wilcoxon Test Statistics

	Z	Asymp. Sig. (2-tailed)
SMEAN(CCL1) - CCL1	.000[b]	1.000
SMEAN(CCL2) - CCL2	.000[b]	1.000
SMEAN(CCL3) - CCL3	.000[b]	1.000
SMEAN(CCL4) - CCL4	-1.414[c]	.157
SMEAN(CCL5) - CCL5	-1.000[c]	.317
SMEAN(CHI1) - CHI1	-2.000[c]	.046
SMEAN(CHI2) - CHI2	-1.000[c]	.317
SMEAN(CHI3) - CHI3	-1.000[c]	.317
SMEAN(CHI4) - CHI4	-1.732[c]	.083
SMEAN(CHI5) - CHI5	-2.449[c]	.014
SMEAN(CAD1) - CAD1	-1.000[c]	.317
SMEAN(CAD2) - CAD2	-2.236[c]	.025
SMEAN(CAD3) - CAD3	-2.449[c]	.014
SMEAN(CAD4) - CAD4	-1.000[c]	.317
SMEAN(CAD5) - CAD5	-3.464[c]	.001
SMEAN(CMA1) - CMA1	-1.414[c]	.157
SMEAN(CMA2) - CMA2	-2.236[c]	.025
SMEAN(CMA3) - CMA3	-1.732[c]	.083
SMEAN(CMA4) - CMA4	-2.449[c]	.014
SMEAN(CMA5) - CMA5	-1.732[c]	.083
SMEAN(KAC1) - KAC1	-2.449[c]	.014
SMEAN(KAC2) - KAC2	-1.732[c]	.083
SMEAN(KAC3) - KAC3	-1.414[c]	.157
SMEAN(KAC4) - KAC4	-2.646[c]	.008
SMEAN(KSE1) - KSE1	-1.000[c]	.317
SMEAN(KSE2) - KSE2	-1.000[c]	.317
SMEAN(KSE3) - KSE3	.000[b]	1.000
SMEAN(KSE4) - KSE4	-1.732[c]	.083
SMEAN(KGE1) - KGE1	-2.000[c]	.046
SMEAN(KGE2) - KGE2	-1.414[c]	.157
SMEAN(KGE3) - KGE3	-1.732[c]	.083
SMEAN(KGE4) - KGE4	-1.732[c]	.083
SMEAN(KASEM1) - KASEM1	-1.732[c]	.083
SMEAN(KASEM2) - KASEM2	-3.162[c]	.002
SMEAN(KASEM3) - KASEM3	-1.414[c]	.157
SMEAN(KASEM4) - KASEM4	-3.317[c]	.001
SMEAN(KEM1) - KEM1	-1.732[c]	.083
SMEAN(KEM2) - KEM2	-2.236[c]	.025
SMEAN(KEM3) - KEM3	-2.236[c]	.025
SMEAN(KEM4) - KEM4	-3.000[c]	.003
SMEAN(KME1) - KME1	-2.000[c]	.046
SMEAN(KME2) - KME2	-2.646[c]	.008
SMEAN(KME3) - KME3	-2.236[c]	.025

	Z	Asymp. Sig. (2-tailed)
SMEAN(KME4) - KME4	-2.646[c]	.008
SMEAN(KCO1) - KCO1	-1.000[c]	.317
SMEAN(KCO2) - KCO2	-2.646[c]	.008
SMEAN(KCO3) - KCO3	-2.449[c]	.014
SMEAN(KCO4) - KCO4	-2.236[c]	.025
SMEAN(KCOO1) - KCOO1	-1.732[c]	.083
SMEAN(KCOO2) - KCOO2	-1.000[c]	.317
SMEAN(KCOO3) - KCOO3	-1.732[c]	.083
SMEAN(KCOO4) - KCOO4	-2.000[c]	.046
SMEAN(KLE1) - KLE1	-1.732[c]	.083
SMEAN(KLE2) - KLE2	-2.236[c]	.025
SMEAN(KLE3) - KLE3	-3.162[c]	.002
SMEAN(KLE4) - KLE4	-3.317[c]	.001
SMEAN(OP1) - OP1	-3.606[c]	.000
SMEAN(OP2) - OP2	-2.000[c]	.046
SMEAN(OP3) - OP3	-1.732[c]	.083
SMEAN(OP5) - OP5	-1.732[c]	.083
SMEAN(OP6) - OP6	-2.236[c]	.025
SMEAN(OP8) - OP8	-3.000[c]	.003
SMEAN(OP9) - OP9	.000[b]	1.000

A.5 Normality Test

Descriptive Statistics							
	N	**Mean**	**Std. Deviation**	**Skewness**		**Kurtosis**	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CCL1	302	2.3046	1.14406	.655	.140	-.232	.280
CCL2	302	2.5199	1.18599	.482	.140	-.637	.280
CCL3	302	2.7980	1.15663	.116	.140	-.759	.280
CCL4	302	2.5968	1.08171	.271	.140	-.567	.280
CCL5	302	2.8107	1.15883	.053	.140	-.733	.280
CAD1	302	2.4199	1.14783	.477	.140	-.464	.280
CAD2	302	2.3688	1.03761	.489	.140	-.194	.280
CAD3	302	2.5414	1.06707	.354	.140	-.353	.280
CAD4	302	2.5487	1.13835	.287	.140	-.635	.280
CAD5	302	2.6286	1.09533	.187	.140	-.594	.280
CHI1	302	2.5183	.99692	.334	.140	-.248	.280
CHI2	302	2.7373	1.09592	.128	.140	-.644	.280
CHI3	302	2.5168	.99486	.198	.140	-.463	.280
CHI4	302	2.5648	1.05021	.287	.140	-.540	.280
CHI5	302	2.5963	1.07183	.350	.140	-.464	.280
CMA1	302	2.5201	1.13665	.449	.140	-.409	.280
CMA2	302	2.6265	1.19733	.382	.140	-.710	.280
CMA3	302	2.4684	1.06351	.609	.140	-.006	.280
CMA4	302	2.5138	1.03099	.338	.140	-.357	.280
CMA5	302	2.4851	1.10373	.501	.140	-.362	.280
KAC	302	2.6493	.87221	.260	.140	-.295	.280
KSE	302	2.4425	.91054	.755	.140	.181	.280
KGE	302	2.4900	.85326	.647	.140	.272	.280
KASEM	302	2.4633	.84785	.477	.140	-.192	.280
KEM	302	2.7272	.70248	-.159	.140	-.074	.280
KME	302	2.6169	.78446	.506	.140	-.164	.280
KCOO	302	2.4579	.92542	.409	.140	-.513	.280
KCO	302	2.4480	.84963	.593	.140	-.218	.280
KLE	302	2.5083	.86295	.502	.140	-.098	.280
OP1	302	1.4810	.97501	2.251	.140	4.440	.280
OP2	302	2.8725	1.29804	.111	.140	-.973	.280
OP3	302	2.8361	1.31560	.103	.140	-.995	.280
OP5	302	2.9298	1.18058	.125	.140	-.633	.280
OP6	302	1.6364	.95536	1.642	.140	2.362	.280
OP8	302	2.9659	1.19475	-.369	.140	-.826	.280
OP9	302	2.9007	1.32823	.158	.140	-1.011	.280
Valid N (listwise) =302							

A.6 Discriminate validity

	HIERAR	MARKET	ADHOCR	CLN	OP	OActivities	MActivities
HIERAR	1						
MARKET	0.2981	1					
ADHOCR	0.1354	0.1866	1				
CLN	0.3493	0.7762	0.3272	1			
OP	0.1521	0.1568	0.5027	0.1875	1		
OActivities	0.1681	0.5898	0.0992	0.5852	0.0515	1	
MActivities	0.1069	0.1414	0.5041	0.2088	0.3552	0.2381	1

Appendix B Questionnaire

B.1 English Version

Knowledge Chain: A mediating Effects of competing value towards Organisational Performance

Questionnaire Survey

Dear Participant:

We are currently undertaking a research project investigating of mediating effect of culture towards organisational performance in knowledge chain model. Your response is extremely important to the success of this study. We would like to assure you that your response will be treated as **"Strictly Confidential**". Your response will be used for academic proposes **only**. Please answer the questionnaire from the perspective of your job title that most clearly defines your job responsibilities (e.g. Director, Vice-President, Operation Manager, Plant Manager, etc). Also, please note that we have written these questions to be applicable to many types of service companies and may not all exactly apply to your situation. Nevertheless, please attempt to answer all questions. However, if you are unsure about response, or think it would be misleading, please leave the specific question unanswered. The advantage of this survey you obtain is you can check the summary of the results, plus you can automatically review the problems involved for knowledge chain in your organisation.

Thank you in advanced for your help and cooperation

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Please complete and return this questionnaire within 10 days to the return address (see cover page) or envelope address.

Please read all instructions carefully before completing the survey.

Rating format: (1= strongly disagree; 2= disagree; 3= neither; agree nor disagree; 4=agree; 5=strongly agree).

Note: *Throughout the survey you will see the term "organisation." When you see this term, please think of the highest level (e.g., work unit, division, department, directorate) within your overall organisation that is most meaningful to you in terms of how you experience your organisation's culture.*

Please respond to the following statements in terms of the degree to which they accurately reflect your organisation's culture, as it currently exists

Organisational Culture	**Strongly Disagree**	**Disagree**	**neutral**	**Agree**	**Strongly agree**
1. This organisation is a very personal place. It is like an extended family. People seem to feel comfortable sharing their personal situations with their colleagues.					
2. This organisation emphasizes personal and professional development. There is a strong focus on developing skills and providing interesting work opportunities.					
3. This organisation is a very dynamic and entrepreneurial place. People are willing to stick their necks out and take risks.					
4. The "glue" that holds this organisation together is commitment to innovation and development. There is an emphasis on being on the cutting edge.					
5. The management style in this organisation is characterized by individual risk-taking, innovation, freedom, and uniqueness.					
6. This organisation defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.					
7. The "glue" that holds this organisation together is loyalty and mutual trust. Commitment to this organisation runs high.					
8. The management style in this organisation is characterized by teamwork, Consensus, and participation.					
9. This organisation emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.					
10. This organisation defines success on the basis of having the most unique or newest products. It is a product/service leader and innovator.					

11. This organisation is very result- oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.					
12. The management style in this organisation is characterized by hard-driving competitiveness, high demands, and achievement.					
13. The "glue" that holds this organisation together is the emphasis on achievement and goal accomplishment. Aggressiveness and winning are common themes.					
14. This organisation emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.					
15. This organisation defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.					
16. This organisation is a well controlled and structured place. Formal procedures Generally govern what people do.					
17. The management style in this organisation is characterized by security of employment, conformity, predictability, and stability in relationships.					
18. The "glue" that holds this organisation together is formal rules and policies. Maintaining a smooth-running organisation is important.					
19. This organisation emphasizes permanence and stability. Efficiency, control and smooth operations are important.					
20. This organisation defines success on the basis of efficiency. Dependable delivery, smooth scheduling, and low-cost production are critical.					
This part questions are about **Knowledge acquisition**. Knowledge acquisition means gathering and obtaining knowledge in the organisation.					
21.This organisation required knowledge is obtained through :	**Strongly Disagree**	**Disagree**	**neutral**	**Agree**	**Strongly agree**
a) Gathering advice from consultant, customers or supplier					
b) Contracting with other companies in order to find their knowledge					
c) Hiring employees from competing firms especially for accessing the knowledge development					
d) Collecting and improving knowledge from outside					

Knowledge selection is selecting the best knowledge among different available knowledge						
22. In order to choose the best knowledge in your organisation which way is normally used?		**Strongly Disagree**	**Disagree**	**neutral**	**Agree**	**Strongly agree**
a)	Participating in house training to find the best knowledge and select that knowledge					
b)	Recalling success stories					
c)	Identifying experts in a subject matter and find out their idea					
d)	Selecting the expert most appropriate for a particular query					
Knowledge generation is producing knowledge by either discovery or derivation from existing knowledge.						
23. This organisation is producing knowledge by:		**Strongly Disagree**	**Disagree**	**neutral**	**Agree**	**Strongly agree**
a)	Creating knowledge from historical events which learned					
b)	Improving process through experience in use					
c)	Creating knowledge from innovations and new ways					
d)	Creating new knowledge from the application of existing knowledge					
Knowledge Assimilation (internalization) is changing the state of an organization's knowledge resources by distributing and storing acquired, selected, or generated knowledge						
24. How do you internalize knowledge between individuals in the organisation?		**Strongly Disagree**	**Disagree**	**neutral**	**Agree**	**Strongly agree**
a)	Using internet to transfer your experience toward their colleagues.					
b)	Using available facilities to send your individual knowledge to the thers					
c)	Broadcasting a new regulation via email					
d)	Publishing in newsletter					
Knowledge Emission (externalization) is embedding knowledge into organizational outputs for release into the environment						

25. The employees in this organisation distribute their knowledge through	Strongly Disagree	Disagree	neutral	Agree	Strongly agree
a) Posting an idea on an internet					
b) Storytelling for their colleagues about your knowledge					
c) Offering advisory service for their colleague					
d) Create a new product or service, according to previous experience					
Knowledge Measurement is assessing values of knowledge resources, knowledge processors, and their deployment					
26. The Management measures time and money which saved by implementing knowledge practices.	Strongly Disagree	Disagree	neutral	Agree	Strongly agree
a) Conducting customer satisfaction measurement					
b) Measuring time money and personal time saved by implementing knowledge activities					
c) Identifying knowledge assets and their associated risk Improving process through process analysis					
d) Measuring the success and failure rate of programs linked to the KM assets over time					
Knowledge Control is ensuring that needed knowledge processors and resources are available in sufficient quality and quantity, subject to security requirements					
27. The management providing open access to collected information for the employees	Strongly Disagree	Disagree	neutral	Agree	Strongly agree
a) Providing open access to collected information					
b) Identifying existing control and security measure over the assets					
c) Providing adequate knowledge for the technology involved					
d) Improving defect analysis and customer service					
Knowledge Coordination is managing dependencies among KM activities to ensure that proper processes and resources are brought to bear adequately at appropriate times					
28. The management supports appropriate communication channels for knowledge flow in our organisation	Strongly Disagree	Disagree	neutral	Agree	Strongly agree
a) Determine appropriate communication channels for knowledge flow					
b) Providing access to rich pools of idea so others can capitalize on them					

c)	Motivate employees to perform KM activities					
d)	Making sure upper management understands and is ready to support knowledge					
Leadership is establishing conditions that enable and facilitate fruitful conduct of KM						
29. The management provides opportunities by placing employees in situations where they can use their knowledge.		**Strongly Disagree**	**Disagree**	**neutral**	**Agree**	**Strongly agree**
a)	Sponsoring supporting and nurturing collaborative knowledge networks					
b)	Providing opportunities by placing employees in situations where they can use their knowledge					
c)	Facilitating and accelerating knowledge					
d)	Developing a km action plan					
Organisational Performance						
30. How well your organisation achieves market orientation goals as well as its competitors in		**Strongly Disagree**	**Disagree**	**neutral**	**Agree**	**Strongly agree**
Market share in primary market						
The Return on investment						
The growth of market share						
Sales volume						
On time delivery						
Cash flow						
New product introduction						
Customer satisfaction						
Productivity of labor force						
Cost reduction						
Personal Background						

1. What is your current (or most recent) job/title?

	Executive Manager
	Functional Manager or Supervison

☐	Operational Manager

2. What is your Employment status?

☐	F- Full time
☐	P-part-time

3. How long have you had this job/position?

☐	Less than 5 years
☐	5-10 years
☐	11-20 years
☐	More than 20 years

4. How long have you been working for current company?

☐	Less than 5 years
☐	5-10 years
☐	11-20 years
☐	More than 20 years

5. Estimate the percentage of your time that you have spent working as part of a project team (i.e., part of a group that has shared responsibility for some tangible outcome or objective and where members are interdependent on each other for getting the task complete) (min. 0- max.100 %) _____

6. Please indicate your age.

☐	Below 25
☐	26-35
☐	36-45
☐	46-55
☐	>55

7. Please, indicate your gender.

☐	Male
☐	Female

8. Please, indicate your ethnic background by selecting from the categories below

	Fars
	Tork
	Kord
	Lord
	Gilak

Company characteristic

Please, provide the following information by placing at the appropriate response.

9. Please classify the type of company you work for by choosing from the available Categories:

	Education/University
	Telecommunications
	Financial services/Banking

10. Please indicate the number of full time employees in your company.

	Less than 150
	150-500
	501-1000
	1001-2000
	Above2000

11. Please indicate sales turnover of your company.

	Below than 50 million
	Between 51 million to 100 million
	Between 101 million to 150 million
	Between 151 million to 200 million
	Above 200 million

12. Please indicate the ownership status of your company.

	Private company
	State company
	Multinational firm, please specify the original company

	Joint venture firms, please specify original company
	Others, please specify

B.2 Persian Version

پاسخگوی گرامی

با سلام، این پرسشنامه مربوط به تحقیقی دانشگاهی و علمی دربارۀ نقش ICTها در مدیریت میباشد . سپاسگزار خواهیم بود که با ما همکاری نموده و با پاسخهای دقیقِ خود ما را در شناخت این ویژگیها یاری نمائید. ضمناً به استحضار می‌رساند این پرسشنامه بدون ذکر نام می‌باشد و انتخاب شما به عنوان پاسخگو کاملاً بصورت تصادفی صورت گرفته است. پیشاپیش از همکاری صمیمانه شما در پاسخگویی به سؤالات متشکریم.

این بخش از سوالات در مورد فرهنگ سازمانی میباشد. کسب دانش به معنی جمع آوری و به دست آوردن دانش سازمانی است.

فرهنگ سازمانی	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
1.این سازمان مانند خانه شخصی ماست. در اینجا ما مانند یک خانواده بزرگ هستیم و کارمندان برای تشریک مساعی با همکاران خود براحتی حاضر به همکاری هستند.					
2.این سازمان تاکید بر رشد فردی و حرفه ای کارمندان خود با تمرکز قوی بر مهارت های در حال توسعه و فراهم کردن فرصت کار دارد .					
3.این سازمان محل بسیار پویا و کارآفرینی می باشد بخصوص برای افرادی که مایل به ریسک بالا هستند.					
4.عامل انسجام دهنده این سازمان تعهد به نوآوری و توسعه است و تاکید بر اینکه در نوک پیکان نواوری و توسعه حرکت کرد.					
5. مدیریتی که در این سازمان است بر مبنای ریسک پذیری ، نوآوری ، آزادی ، و منحصر به فرد بنا نهاده شده است .					
6.موفقیت این سازمان بر اساس توسعه منابع انسانی ، کار تیمی ، تعهد کارمند ، و نگرانی برای مردم تعریف شده است .					
7.عامل انسجام دهنده این سازمان وفاداری و اعتماد متقابل است.					
8.سبک مدیریت در این سازمان توسط کار تیمی ، اجماع ، و شرکت توصیف شده است .					
9.این سازمان بر دستیابی به منابع جدید و ایجاد چالش های جدید تاکید دارد و تلاش برای فرصتهای جدید را ارزشمند میداند .					

10.تعریف موفقیت در این سازمان بر اساس داشتن منحصر به فرد ترین وجدیدترین محصولات میباشد.					
11.این سازمان بسیار نتیجه گرا ست و نگرانی عمده این سازمان انجام گرفتن صحیح کارهای جاری است که میبایست بسیار رقابتی و واقع گرا باشند.					
12.سبک مدیریت در این سازمان سخت رقابتی و قابل حصول شناخته شده است .					
13 .عامل انسجام دهنده این سازمان تأکید بر دستیابی به موفقیت و هدف است و تمایل به برندهگی در رقابت های بین سازمانی تیز رایج است .					
14.در این سازمان اقدامات رقابتی و موفقیت در هدف های درازمدت و پیروزی در بازار غالب است .					
15.تعریف موفقیت در این سازمان بر اساس پیروزی در بازار رقابت و رهبری بازار رقابتی است .					
16.این سازمان به خوبی سازماندهی و کنترل شده است و به طور کلی روش ها و قوانین رسمی در اداره این سازمان بکار گرفته میشود .					
17.سبک مدیریت در این سازمان است بر مبنای امنیت شغلی کارکنان و یکرنگی و ثبات در روابط کارکنان قابل مشاهده است.					
18.انسجام این سازمان برمبنای قواعد رسمی و سیاست های کلی سازمان است . حفظ سازمان فعال بسیار مهم است .					
19.دراین سازمان بر بردوام و ثبات، بهره وری ، کنترل عملیات نا محسوس تاکید می شود .					
20.تعریف موفقیت در این سازمان بر اساس بهره وری و و تحویل به موقع پروژه های در دست اجراو زمانبندی قابل اجرا و کم هزینه میباشد.					
این بخش از سوالات در مورد کسب دانش می باشد. کسب دانش به معنی کسب دانش از منابع خارجی و داخلی و آمادهسازی آن برای استفادههای بعدی است. 21. به نظر شما این سازمان دانش مورد نیازخود را تا چه حد از طرق زیر بدست میآورد؟					
کسب دانش **Knowledge Acquisition**	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) مشاور با مشتریان یا تامین کنندگان					
ب) انعقاد قرارداد با شرکت های دیگر به منظور پیدا کردن دانش مورد نیاز					

ج) استخدام کارکنان از شرکت های رقیب به خصوص برای دسترسی به توسعه دانش					
د) جمعآوری و بهبود وضعیت دانش از خارج از سازمان					

این بخش از سوالات در مورد انتخاب دانش می باشد. انتخاب دانش به معنی انتخاب بهترین دانش در میان دانش های مختلف دردسترس سازمان است.

22.به منظور انتخاب بهترین دانش در سازمان شما کدام روش به طور معمول استفاده می کنید؟

انتخاب دانش **Knowledge Selection**	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) شرکت در آموزشهای داخل سازمانی و یافتن بهترین دانش					
ب) یادآوری داستان های موفقیت امیز سازمان					
ج) شناسایی کارشناسان در موضوع خاص و استخراج ایدهای انان					
د) انتخاب کارشناسی که برای پاسخگویی به سوالات خاص مناسب باشد					

این بخش از سوالات در مورد تولید دانش میباشد. تولید دانش به معنی تولید دانش با کشف، استخراج و همافزایی از دانش در سازمان موجود است.

23.تولید دانش در این سازمان چگونه انجام می گردد؟

تولید دانش **Knowledge Generation**	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) ایجاد آگاهی از وقایع تاریخی که میتواند آموزنده باشد.					
ب) بهبود فرآیند از طریق استفاده از تجربه					
ج) از طرق نوآوری ها و دانش جدید					
د) ایجاد دانش جدید با استفاده از دانش موجود					

این بخش از سوالات در مورد جذب دانش در سازمان میباشد. جذب دانش به معنی تغییر وضعیت منابع دانش سازمان از طریق توزیع و ذخیره سازی دانش بدست آمده، تولید شده و یا انتخابشده است.

24.در سازمان شما چگونه دانش خود را از افراد جذب می نمائید؟

جذب دانش (درونی کردن دانش) **Knowledge Assimilation** (Internalization)	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) با استفاده از اینترنت برای انتقال تجربه خود به همکاران استفاده میکنیم					

ب) با استفاده از شبکه موجود برای ارسال دانش فردی خود به دیگران					
ج) پخش مقررات جدید از طریق ایمیل					
د) نشر در خبرنامه					
ین بخش از سوالات در مورد توزیع دانش در سازمان میباشد. توزیع دانش به معنی تزریق دانش در تولیدات خروجی سازمان است. 25.کارکنان در این سازمان توزیع دانش خود را از طریق انجام میدهند؟					
توزیع دانش **Knowledge Emission** (externalization)	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) ارسال ایده‌ای جدید در شبکه داخلی سازمان					
ب) تکرار داستانهای موفقیت شرکت با دانش خود را برای همکاران					
ج) ارائه خدمات مشاوره ای برای همکار خود					
د) ایجاد محصول یا خدمات جدید با توجه به تجربهای قبلی					
این بخش از سوالات در مورد اندازه گیری دانش در سازمان میباشد. اندازه گیری دانش به معنی ارزیابی ارزش منابع دانش، پردازش و بکارگیری آنها است 26. بنظر شما سازمان چگونه با وقت و پول ذخیره شده دانش بدست امده را محاسبه می نماید؟					
. **اندازه گیری دانش** **Knowledge Measurement**	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) اندازه گیری رضایت مشتری					
ب) با اجرای فعالیت های دانش اندازه گیری زمان و پول هم شخصی را نجات داد					
ج) از طریق فرآیند تجزیه و تحلیل					
د) اندازهگیری میزان موفقیت و شکست برنامههای مرتبط با مدیریت دانش در طول زمان					
این بخش از سوالات در مورد کنترل دانش در سازمان میباشد. کنترل دانش به معنی اطمینان از در دسترس بودن منابع و فرآیندهای دانشی مورد نیاز با کمیت و کیفیت مناسب و ایمی دانش است. 27. مدیریت دسترسی باز به اطلاعات جمع آوری شده از طریق یکی از راههای زیر برای کارمندان فراهم میکند؟					

کنترل دانش **Knowledge Control**	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) فراهم کردن دسترسی آزاد به اطلاعات جمع آوری شده					
ب) درک محدودیت های سازمان و بودجه					
ج) ارائه دانش کافی برای تکنولوژیها مورد نیاز سازمان					
د) ، تجزیه و تحلیل نقص و بهبود خدمات به مشتریان					
این بخش از سوالات در مورد هماهنگی دانش در سازمان میباشد. هماهنگی دانش به معنی هماهنگی فعالیتهای دانشی به صورت پیوسته در زمان مناسب ومنابع مناسب است. 28.حمایت مدیریت از کانالهای ارتباطی مناسب برای جریان دانش در سازمان ما					
هماهنگی **Coordination**	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) تعیین کانالهای ارتباطی مناسب برای جریان دانش					
ب) فراهم کردن امکان دسترسی به ایدههای ناب تا دیگران بتوانند روی آنها سرمایه گذاری کنند					
ج) ایجاد انگیزه در کارکنان برای انجام فعالیت های مدیریت دانش					
د) ایجاد اطمینان از درک و امادگی مدیریت سطح بالا برای حمایت از فعالیت های مدیریت دانش					
این بخش از سوالات در مورد رهبری دانش در سازمان میباشد. رهبری دانش به معنی ایجاد شرایط لازم برای فعال-سازی و تسهیل رفتارهای دانشی است. 29.مدیریت فرصت ها ی زیر را به چه میزان فراهم می کند تا کارگران و کارمندان در شرایطی کاری بتوانند ازدانش خود استفاده کنند					
رهبری دانش **Leadership**	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) حمایت از ضمانت و پرورش شبکه های دانش مشترک در سازمان					
ب) فراهم کردن فرصت با قرار دادن کارگران و کارمندان در شرایطی که آنها می توانند از دانش خود استفاده کنند					
ج) تسهیل و تسریع در استفاده ار دانش تولید شده					

ه) هماهنکی بین اطلاعات , دانش سازمان با اقدامات , ماموریت و چشم انداز سازمان					
این بخش از سوالات در مورد عملکرد دانش در سازمان میباشد. 30 . چگونه سازمان شما به اه‌داف جهت گیری شده بازار و رقبای دست پیدا میکند؟					
عملکرد Performance	کاملا مخالف	مخالف	متوسط	موافق	کاملا موافق
الف) سهم بازار در بازار اولیه					
ب) بازگشت سرمایه					
ج) رشد سهم بازار					
د) تحویل به موقع					
ه) حجم فروش					
خ) جریان وجه نقد					
و) معرفی کالای جدید					
ر) رضایت مشتری					
ز) بهرهوری نیروی کار					
ی) کاهش هزینه					
بخش پیشینه شخصی					
لطفا اطلاعات زیر را با قرار دادن پاسخ مناسب کامل کنید.					
1.عنوان شغل فعلی شما چیست؟ ☐ مدیر عالی ☐ مدیر اجرایی ☐ مدیر عملیاتی					
2. ضعیت استخدام شما چیست؟ ☐ تمام وقت ☐ پاره وقت					

3.چه مدت شما به این کار مشغولید؟

- [ ] کمتر از 5 سال
- [ ] 5-10 سال
- [ ] 11-20 سال
- [ ] بیشتر از 20 سال

4.چه مدت شما برای این شرکت فعلی کار میکنید؟

- [ ] کمتر از 5 سال
- [ ] 5-10 سال
- [ ] 11-20 سال
- [ ] بیشتر از 20 سال

5. برآورد شما از وقتی که صرف کارتان به عنوان بخشی از کار تیمی که به برخی از نتایج ملموس منتهی شد چیست ؟ حد اقل صفر و حد اکثر 100 درصد.

6. سن:

- [ ] کمتر از 25 سال
- [ ] 26-35 سال
- [ ] 36-45 سال
- [ ] 46-55 سال
- [ ] بیشتر از 55 سال

7. جنسیت

- [ ] مرد
- [ ] زن

8. سن

- [ ] کمتر از 25 سال
- [ ] 26-35 سال

36-45 سال	
46-55 سال	
بیشتر از 55 سال	

مشخصات شرکت

لطفا سوالات زیر را با قرار دادن ضربدر در مقابل جواب مناسب تکمیل نمائید.

9. لطفا شرکت شما در کدام یک از گروهای زیر قرار دارد؟

دانشگاه	
ارتباطات	
خدمات مالی / بانکداری	

10. لطفا تعداد کارمندان تمام وقت در شرکتان را علامت بزنید.

کمتر از ۱۵۰	
150-500	
501-1000	
1002-2000	
بالای 2000	

11. لطفا حجم معاملات فروش شرکتان را به صورت میانگین ماهیانه بیان کنید(به تومان):

کمتر از 50 میلیون	
51-100 میلیون	
101-150 میلیون	
151-200 میلیون	
بیشتر از 200 میلیون	

12. لطفا وضعیت مالکیت شرکتان را نشان دهید:

شرکت خصوصی	
شرکت دولتی	

شرکت های چند ملیتی	
شرکت های مشترک سرمایه گذاری	
انواع دیگر (لطفا مشخص کنید)	

Appendix C Service Firms

C.1 Banks and financial institutes

Service Firm		Name	Supervisors
Financial Firms	Commercial banks	Bank Melli Iran	13
		Bank Sepah	11
		Post Bank of Iran	8
	Specialised banks	Bank Maskan	12
		Bank of Industry and Mine	7
		Export Development Bank of Iran	8
		Keshavarzi Bank	11
		Tose'e Ta'avon Bank	13
	Non-Gavernmental-Owned Banks (Private Banks)	Bank Mellat	9
		Bank Pasargad	6
		Bank Saderat Iran	8
		Eghtesad Novin Bank	8
		Karafarin Bank	6
		Parsian Bank	7
		Refah Bank	12
		Saman Bank	9
		Sarmayeh Bank	4
		Tat Bank	7
		Tejarat Bank	13
	Financial and credit institutions	Ansar Financial and Credit Institute (Ansar Bank)	8
		Askariye Finance and Credit Institution	5
		Mollal-Movahedin Financial and Credit Institute Iran Zamin Bank	6
		Shahr Financial and Credit Institute (City Bank)	6
Total Middle Managers			**197**

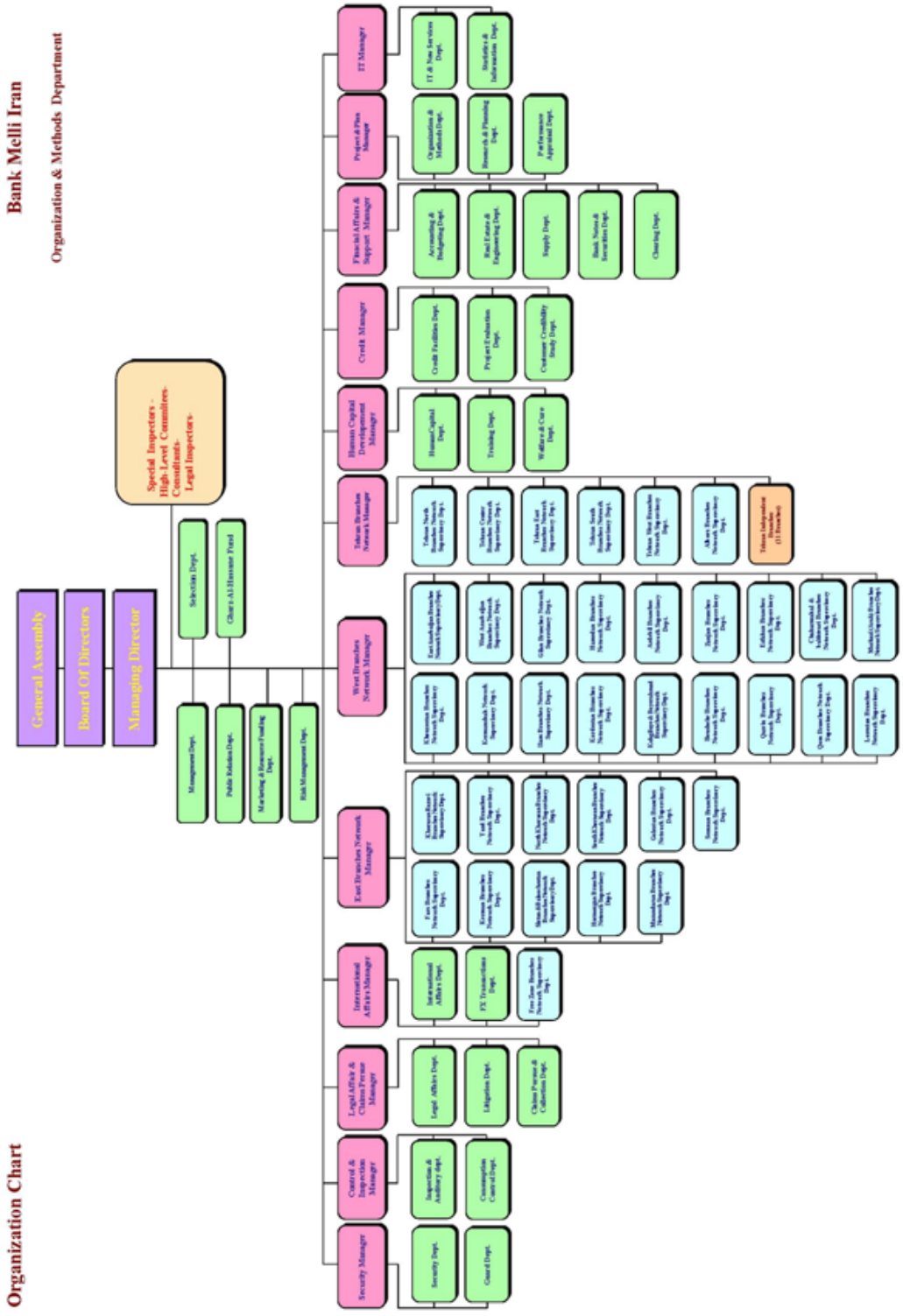
C.2 Educational institutes

Service Firm		Deputies
Educational institute	Allameh Tabataba'i University	4
	Amirkabir University of Technology(Tehran Polytechnic)	6
	Art University	6
	Baqiyatallah University of Medical Sciences	8
	Emam Sadeq University	3
	International University of Emam Reza	6
	Iran University of Medical Sciences	6
	Iran University of Science and Technology	6
	Islamic Azad University Central Tehran Branch	7
	Islamic Azad University East Tehran Branch	6
	Islamic Azad University Karaj Branch	7
	Islamic Azad University North Tehran Branch	7
	Islamic Azad University South Tehran Branch	6
	Islamic Azad University Tehran Medical Branch	8
	Islamic Azad University Varamin-Pishva Branch	8
	K.N. Toosi University of Technology	5
	Kharazmi University(Tarbiat Moallem University)	6
	Power & Water University of Technology (PWUT)	6
	Pyam Noor University	6
	Roudehen Islamic Azad University	7
	Sadra Institute of Higher Education	4
	Shahed University	6
	Shahid Beheshti University	6
	Shahid Beheshti University of Medical Sciences	8
	Share Rey Branch of Islamic Azad University	6
	Sharif University of Technology	6
	Tarbiat MoDares University	6
	Tehran University	8
	Tehran University of Medical Sciences	10
	University of Applied Science and Technology	6
	University of Shahid Motahari	6
	University of Social Welfare and Rehabilitation Sciences	5
Middle Managers		**203**

C.3 Telecommunication

Service Firm		Supervisors
Telecommunication Service Firms	HamraheAval	43
	Iran Cell	37
	Telecommunication Center	4
Total Middle Managers		**84**

C.4 Organisational chart: Bank Melli Iran



Appendix D

D.1 Sample Size Determining From A Given Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: “N” is population size

“S” is sample size.(Krejcie, 1970)